



KRAMER & ASSOCIATES GROUP

Fire Service Consultants

9 Heritage Rd.
Blue Ash, OH 45241
513-678-2279

and **MSA** Architects

Analysis of Fire Department Facilities and Operations

BATTLE CREEK, MICHIGAN

Project Team Leader:

William M. Kramer, Ph.D.

Project Team Associates:

Nestor Melnyk, AIA NCARB

Randall W. Hanifen, M.S.

Michael Washington, B.S.

Cari A. Kramer, B.B.A. EMT-P

Daniel Montgomery, AIA LEED A

BATTLE CREEK, MICHIGAN

Analysis of Fire Department Facilities and Operations

Table of Contents

I.	FOREWORD.....	P 4
II.	EXECUTIVE SUMMARY	P 10
III.	HISTORICAL PERSPECTIVE.....	P 15
IV.	BATTLE CREEK OVERVIEW	P 18
V.	BALANCING FIRE AND EMS RESPONSES	P 22
VI.	RESPONSE DATA	P 26
VII.	INTRO: ARCHITECTURAL REVIEW OF STATIONS	P 29
VIII.	FIRE STATION LOCATIONS.....	P 36
VIII.	RAILROAD CROSSING BLOCKAGES	P 44
	and RAILROAD QUIET ZONES	P 45
IX.	REPLACING FIRE STATIONS.....	P 47
X.	BATTLE CREEK FIRE DEPT. APPARATUS	P 50
XI.	ORGANIZATIONAL LEADERSHIP.....	P 59
XII.	BATTLE CREEK RESPONSE TIME DATA	P 61
XIII.	FUTURE SCHEDULING	P 63
XIV.	COMMUNICATIONS AND DISPATCH	P 65
XV.	EVOLVING FIRE DEPARTMENT MISSION	P 69
XVI.	CEREAL PLANTS AND OTHER INDUSTRY	P 70
XVII.	FIRE PREVENTION	P 71
XVIII.	WATER DEPARTMENT	P 75

BATTLE CREEK, MICHIGAN

Analysis of Fire Department Facilities and Operations

Table of Contents (Continued)

XIX.	PRE-INCIDENT PLANNING	P 77
XX.	MUTUAL AND AUTOMATIC AID.....	.P 78
XXI.	FIRE DISTRICT INCLUDING BATTLE CREEK	P 80
XXII.	RELEVANT NATIONAL STANDARDS	P 85
XXIII.	ENSURING ADEQUATE RESOURCES	P 88
XXIV.	NATIONAL STAFFING TRENDS	P 90
XXV.	BUDGETING AND FINANCE	P 94
XXVI.	EXCELLENCE CHECKLIST	P 99
XXVII.	INSURANCE SERVICES OFFICE (ISO)	P 100
XXVIII.	IMPLEMENTATION OF IMPROVEMENTS	P 101
XXIX.	CONCLUSION.....	P 105
XXX.	APPENDICES.....	P 106
XXXI.	MSA ARCHITECTURAL REVIEW.....	P 206
XXXII.	END OF DOCUMENT	P 279



FOREWORD

During the early months of 2015 William Kramer of the firm ***Kramer and Associates*** led a team of consultants in conducting a study regarding the state of fire protection in Battle Creek, Michigan, delivered from six fire stations and recently from a seventh facility at the W. K. Kellogg airport. Two architects from the acclaimed MSA firm teamed up with the Kramer group. (Resumes of consulting team members are found in **Appendix 1.**)

The consultants performed an analysis to determine the capability of the Battle Creek Fire Department to deliver necessary fire protection and first response for emergency medical calls, both now and into the future. Staffing, Organizational Structuring, Fire Station conditions and locations and similar factors were studied in detail.

A complete analysis is a complex undertaking where a change in one factor has a ripple effect changing all others. For example, the types of fire apparatus and medical emergency response vehicles determine the size needs of a given station. The age and condition of an existing station determines whether it is viable or needs replacing. If it needs replacing then maybe the property can be sold and a replacement facility can be relocated to a more advantageous location. Then maybe several stations can be consolidated, again perhaps changing the space needs of the new facility. The consultants have balanced all of these factors in presenting a blueprint for the future in Battle Creek.

The City of Battle Creek deserves credit for seeking a neutral opinion regarding the Fire Department and EMS Operations since these are among the most vital and expensive of City services.

Lengthy interviews with a wide cross section of stakeholders indicated that there are differing opinions regarding the state of fire protection in Battle Creek. In discussions with governmental leaders, fire officials, union leaders, and ordinary citizens, however, the consultants found appreciation for the fine fire protection provided in Battle Creek.

Officers and members of the Battle Creek Fire Department participated actively in meetings with the consultants, consistently displaying a progressive spirit that can only be beneficial to the residents and corporate citizens of Battle Creek.

A consultant is usually no more intelligent than the client that he or she is serving, but can bring objectivity and non-bias to a jurisdiction that can be quite valuable. It is hoped that this study will provide information that can be used by Battle Creek officials to create a Fire and Rescue service commensurate with increasing demands, and quality service which residents and businesses of Battle Creek deserve. In its unique position as the Centerpiece of Calhoun County and as a municipality with diverse corporate members and residential neighborhoods the city has unique challenges in providing services but corresponding opportunities for creative service delivery.

Increasingly scarce tax dollars mean that there is a genuine community value in any efficiency that can be gained in fire department operations. In a career department like Battle Creek, the lion's share of a budget will go to staffing. Hence it is in the interest of rank-and-file personnel to cooperate in the gaining of new efficiencies so that their value to the community is enhanced and their longevity guaranteed.

Special thanks to City Manager Rebecca Fleury, Fire Chief David Schmaltz and IAFF Local 335 President Chris Love, all of whom cooperated fully to make sure that the study was comprehensive and momentum was maintained. Thanks also to Julie Pena, Fire Chief's Secretary, who was extremely helpful in providing meaningful data and statistical information throughout the study. On many occasions we had impromptu meetings or discussions with these individuals as well as personnel throughout the rank structure in the Battle Creek Fire Department. We gained much insight into the heart and spirit of Battle Creek's future at these meetings.

Sincere appreciation is also extended to Fire Department Battalion Chief Howard Holt, who accompanied architect Nestor Melnyk during the station visits and provided all supplemental information. Thanks too to Battalion Chief Marin Erskine who assisted the consultants as needed.

Thanks and appreciation also to the Mayor and Commissioners of Battle Creek whose words below demonstrate progressive planning and underline the significance of this fire department study:

Mayor and Commission:

Mayor Deb Owens, Ward 1



"It is important to serve the citizens of Battle Creek with compassion, dignity and professionalism; to seek and value input while being open and transparent in the work of our government. It is imperative that we value the diversity of our City and embrace it as a community. As a governing body we must be fiscally responsible and economically effective to provide a quality-of-life environment to all. It is indeed a pleasure to serve this great City!"

Phone: (269) 420-4031

Email: owensfamily49017@aol.com

Vice Mayor Lynn Ward Gray, Ward 2



"As a Battle Creek native, I am deeply rooted in seeing that it succeeds. Working together, we can ensure all residents, especially our youth, have a voice and a seat at the table of city government, building relationships as we go. I will strive to be informed on the issues, mindful and responsible with our resources, engaged at the grassroots level, responsive to the concerns brought before me, and to always remember to give thanks for the opportunity to serve you on the City Commission."

Phone: (269) 830-2456

Email: g4bcnow@gmail.com

Commissioner Dean Newsome, Ward 3



"I am committed to a Battle Creek that creates and expands employment opportunities, while at the same time strengthens residential areas so that those who work in Battle Creek will want to live and reinvest here. The key to a better Battle Creek lies in developing a viable strategic plan, transparency and accountability in government, and highly engaged citizens."

Phone: (269) 924-6794

Email: dean.newsomebc@yahoo.com

Commissioner Mike Sherzer, Ward 4



'It is an honor to serve as a city commissioner for the city of Battle Creek. As a 25 year retiree of the police department, I have observed the city from multiple angles. I have always believed that Battle Creek has the potential to be one of the great cities in Michigan. It is my desire to help move Battle Creek to this standard through improvements in neighborhoods, economic development, recreational opportunities, so Battle Creek is truly a community where people want to live, work, and play

Phone: (269) 420-0384

Email: sherzer4bc@gmail.com

Commissioner Jeff Domenico, Ward 5



"It is my privilege to serve the residents of Ward 5 and our entire city. As City Commissioner, I promise to work hard to bring this city back together. In particular, I will focus on growing our local economy, improving public safety and leveraging the downtown revitalization effort for the benefit of all residents. Battle Creek has a tremendous pool of talented and committed citizens. Working together, we can reclaim our rightful place as one of the best places to live in Michigan."

Phone: (269) 339-1868

Commissioner Susan Baldwin, at-large



"I want to help build Battle Creek into the best community it can be. By focusing on our strengths, we can stimulate economic development, enhance our many diverse neighborhoods, enrich our downtown, and provide opportunities for all residents."

I am honored to serve as a City Commissioner."

Phone: (269) 963-6901

Fax: (269) 965-6387

Email: susanbaldwinbc@gmail.com

Commissioner Andy Helmboldt, at-large



"Thank you to the residents of Battle Creek for placing your trust in me – I am truly honored. I hope to work with you and city staff to create a Battle Creek we can all be proud to call home."

Phone: (269) 660-9659

Email: helmboldt4bc@gmail.com

Commissioner Mark Behnke, at-large



"I want municipal government to be as efficient, creative, and dynamic as that in private business. Every day we search for ways to be more accountable and accessible to our customers, the taxpayers." **Phone:** (269) 441-7663

Fax: (269) 441-7665

Voice mailbox: (269) 441-7513

Email: markbehnke@aol.com

Commissioner Dave Walters, at-large



"Serving on the Battle Creek City Commission is an honor and a privilege. Being proud of Battle Creek makes me want to help strengthen the City and provide a voice for the people that live, work, and visit here. Let's continue to work together to make Battle Creek a place where folks can live long and prosper by maintaining a safe, neighborly, and business-friendly atmosphere." **Phone:** (269) 209-0626

Email: davewalters4bc@aol.com

Active and retired firefighters and the community citizens all displayed a progressive spirit that will ultimately benefit the Battle Creek Fire Department Service area. All who supported this study are credited with providing vision into the future. All persons who are directly or indirectly involved in providing fire protection displayed a willingness to reach common ground as they work from different perspectives.

It is evident that while interested parties may have differing opinions, they all want to see a successful Battle Creek Fire Department and are open to improvements.

The consultants found a classic aging fire department, steeped in tradition but trying to deliver modern fire protection, EMS response, and technical rescue from outdated facilities which could be located more efficiently.



Battle Creek City Hall

A comprehensive analysis was performed to determine the capability of the fire companies, as currently organized in Battle Creek, individually and collectively to deliver necessary fire protection and other emergency services, both now and into the future. The four-page synopsis below is an “Executive Summary” which gives a brief overview of the findings.

EXECUTIVE SUMMARY

The consultants reviewed all aspects of the Battle Creek Fire Department in detail. During numerous multiple-day site visits the consultants interviewed key personnel from City Government and the Fire Department, other area Fire Departments and other city agencies that had a role in the operations of the Fire Department. Reams of statistical data were reviewed, collated and reduced to summary tables in this report. The Consultants at all times strove for detailed factual data and a wide range of viewpoints.

The consultants were impressed with the high degree of professionalism in City government and in the Fire Service itself. Several members of the consulting team monitored field operations whenever possible. In short, they are pleased to report that the Fire Department is performing quite well despite working out of facilities that are overdue for upgrades and/or replacement, and from fire apparatus that needs modernizing.

Mission:

The report analyzes services provided now and those in an expanded role to address any “gaps” in emergency services. To his credit Chief Schmaltz is working to include the fire department more broadly in County and Regional planning for larger scale emergencies.

We examined the existing mission of the Battle Creek Fire Department during the analysis and found it is almost a full-service fire department delivering all forms of expected emergency response except for medical transport. The Fire Department is not meeting national standards for crew sizes per apparatus but does have sufficient personnel on duty overall. We will propose changes that are essentially staffing neutral, using fewer facilities and allowing stronger response throughout the city. For example, the largest demand for fire protection is in the Washington Heights area, but the undersized crew from the obsolete station there cannot even begin structural firefighting operations, according to standard, until joined by units from further away. We proposed doubling the crew from a newer more central facility that will give superior first alarm response to Washington Heights as well as other portions of the central city.

Most fire departments provide Emergency Medical Service as does Battle Creek which provides “MFR” Medical First Responders. In Battle Creek it is LifeCare, a private entity, which provides all ambulance transports in quality fashion and will likely continue to do so indefinitely. LifeCare is on solid footing for now but as a private corporation has the right to go out of business. Another private ambulance provider, “Medcorp” did cease serving communities in six states rather abruptly, so we will suggest that Battle Creek should have a “Plan B” for ambulance transport service if ever needed, possibly using fire department personnel.

Staffing: Battle Creek

The consulting team found varying degrees of energy and enthusiasm among members of all ranks in the Battle Creek fire Department and overall a professional group of which the City can be proud. Staffing levels are comparable to cities of similar size, but spread thin.

Personnel are stretched out across six municipal fire stations, not all ideally located and a seventh now at the W.K. Kellogg Airport. The number of stations could be reduced through strategic relocation of a headquarters station either on the edge of Washington Heights (in the vicinity of Capitol and North) or slightly more central, at a city-owned parcel at Main and Dickman Streets. Also, a new facility on the West side could jointly serve the City and the Airport with a two-directional bay configuration maintaining airport security between the municipal side and the airport side.

Fire Apparatus and Equipment:

The rolling stock, or more commonly called fire apparatus units, now serving Battle Creek were analyzed and found to be serviceable but aging. Pump and ladder tests are current but some reserve units are not fully enclosed, in violation of safety standards. An apparatus replacement schedule is provided in the report. The existing fleet can be tweaked going forward to meet the needs of the city. Specifically the consultants like the versatility of fire apparatus that combines engine and ladder capabilities into one vehicle. This "Quint" concept will be examined.

Projected space needs for active and reserve equipment of the Fire Department is analyzed from both architectural and a deployment perspectives. Impetus is given to the adapting of new technology in apparatus and to the removal of obsolete apparatus from fleet.

Fire stations:

The number and distribution of fire stations is not really ideal with a heavier concentration in the older parts of the city and a more sparse distribution to the south and west. In this report we will use computer time and distance graphics to suggest better distribution in an affordable manner.

We also show how the number of stations is high for the population, even as we acknowledge the wide geographical spread. In Dearborn Heights near Detroit, there are two stations to protect a population of 57,774. Our analysis shows that the average number of fire stations is about 4 for similar populations but the average square mileage covered in these communities is less than half of what is in Battle Creek. Based on population density, access and timely response standards, our recommendation shows a need for five now, and a possible sixth at least several decades away.

As a minimum the City should have five working fire stations. On a temporary basis, the City could substitute a solid AUTOMATIC AID agreement with the Veteran's facility for our suggested fifth station in the Northwest. Also, if there is ever significant development or population growth in the Southwest, suggestions for the future sixth station are given.

Adding new fire stations seems to be an expensive proposition but the cost of the facility is a mere fraction of the investment in salaries for the personnel which will staff the station over its lifetime. The importance of a quality location is shown to be an investment far beyond construction costs.

Training:

The report covers the importance of training in the fire department and provides suggestions both for basic firefighting operations, and leadership for officers. We advocate low-cost high-quality programs such as National Fire Academy courses, and means by which local training can be more relevant and exciting. The fire chief's addition of 24-hour Battalion Chief supervision was overdue and strengthens the command structure considerably.

Run Data, Fire Suppression, Fire Prevention and Balance in functions:

The report analyzes run data and response times and provides suggestions for improvement. Where service demand is greatest, response times are within recommended standards, but like most cities, in the sparsely populated outer areas of Battle Creek, average response times and distances are stretched to the limits of acceptability. The report addresses the changing nature of the fire department role in the community, looks at it from a regional perspective and notes the occasional need to give and receive mutual aid.

Currently fire prevention and inspection duties fall on the hands of one individual while the regional average is 2.3 individuals. Also, in many departments the firefighters on the companies take on part of the prevention and inspection role, and this should be considered for Battle Creek.

Topography and Demographics

The study provides an overview of Battle Creek as a community, including topography, demographics, special hazards, target zones, and other unique characteristics that impact upon fire and emergency response. It analyzes unique corporate citizens such as the cereal industry as a key taxation sponsor but also potential resource demand for the Battle Creek Fire Department. The study analyzes the community in light of new demands placed on the modern fire service, including emergency management and homeland security. See **Appendix 2** for the demographics that were used as a backdrop for this study.

Standards, Comparisons

In analyzing call volume and response times, the report references national standards for performance and staffing recommendations, such as National Fire Protection Association (NFPA) Standard 1710, and analyzes the present and future ability of the Battle Creek Fire Companies, individually and as a group, to comply with the standards. The study will include a comparison of Battle Creek with similar sized fire districts regarding the structuring and staffing of Fire Departments. Similarly, the report also provides present and future requirements necessary to maintain or improve district ratings by ISO (Insurance Services Office), which impact fire insurance costs, especially for businesses

Regarding fire suppression activities at an incident, the report shows that the Battle Creek Fire Department can usually meet rigorous National Standards as a department even though individual fire companies are deficient in staffing. Its ability to control fires and meet standards is compromised primarily when multiple simultaneous EMS calls deplete available firefighting personnel.

Future Organizational Combinations:

When communities pay for full-time persons to staff fire stations, or even to guarantee that there will be a response, there is an efficiency gained if the persons can serve as both Firefighters and EMTs or paramedics, and give both fire protection and transporting ambulance service. Although this is not the model in Battle Creek, it has considerable success in other parts of Michigan and other parts of the country. If on-duty persons are cross-trained, they can usually address the first emergency first--be it fire, EMS, rescue, HAZMAT, or other.

Hence, a combination of Fire and EMS Transport operations in Battle Creek should not be ruled out, especially in the longer term. We note that LifeCare now provides excellent transport services to the Battle Creek community, even though the fire department arrives first in most cases.

Funding, Budgets:

Both the capital and operating budgets in Battle Creek are limited and the fire department should be prepared to operate without significant increases. In light of the fact that paid personnel usually consume a "lion's share" of a fire department budget, any personnel additions would have to be off-set with new revenues.

Water Supply:

The consultants analyzed the water system and found that there are adequate water mains with sufficient volume and pressure in most of the City. The Battle Creek Fire Department can usually provide adequate water from tanks on the pumpers that respond so that sufficient water is available to control a room and contents fire. Fire companies can tap into hydrants with sufficient volume for the larger fires. When new hydrants are installed they should be specified to have "Stortz" fittings on the primary or steamer outlet at little or no marginal cost.

Communications

The consultants found strength in the Calhoun County Consolidated Dispatch Authority even though it is located in Marshall. We see an advantage in a regional center that handles police, fire and EMS from the same central facility.

There is a need for multi-agency drilling where radio communications and "interoperability" among Battle Creek and adjacent agencies are specifically tested. (A county-wide disaster plan might provide an opportunity for this type of needed practice.)

Territory Growth

Battle Creek is essentially a diversified community including residences and complexes commercial establishments, and it has the potential for hazardous material incidents from the many rail lines and trucking routes that traverse the city.

The pages of this report will provide more specific and detailed information for each of these targeted categories and will provide the logic and rationale behind the findings and suggestions. The report does not follow the same exact order as the executive summary above, since many of the subjects are interrelated, and are often cross-referenced in different contexts

**Below: From the 1940's: A piece of Battle Creek History
(Battle Creek was the first fully motorized department in the U.S.A.)**



Battle Creek's New Emergency Truck

THE RESCUE CAR SHOWN ABOVE is built to carry six men with full emergency equipment as follows: one 300-gallon Barton pump; one 150-gallon booster tank with two booster-tank leads with fog nozzles; one 10-foot folding aluminum ladder for inside work; two 10-foot lengths of suction hose; six fire pails; two soda-and-acid extinguishers; two Foamite extinguishers, two Pyrene extinguishers, and two Indian fire pumps, as well as a full equipment of fire-fighting tools including a complete set of tools for handling sprinkler systems. Other rescue items are: a double fresh-air smoke-mask equipment for two men; one in-

halator equipped to handle two victims at a time; two fire-resisting blankets; and one stretcher suspended on springs from roof of car. The car is equipped with two-way radio and has two tow hooks and two tow ropes for removing cars from in front of burning buildings.

This car is a special conversion job, the body being converted by the Dodge Division of the Chrysler Corporation at its own plant. Windows were built in the panel and an extra door added on the right side, allowing six men to enter and leave freely.

S. P. WEEKS,
Chief, Fire Department, Battle
Creek, Mich.

HISTORICAL PERSPECTIVE

The Battle Creek Fire Department has provided fundamental service throughout its history. It continues to protect the city, including the high profile tenants such as Kellogg's, Post and Ralston-Purina. Although the frequency and severity of structure fires are declining nationally, Battle Creek continues to have structure fires on a regular basis. Also, new demands such as Carbon Monoxide alarms, increasing hazardous material incidents, and vehicular accident assists all require the presence of a well-trained quick responding fire department.

Over time, the six municipal fire stations have undergone various transitions and currently are positioned at a critical crossroad where their future should be plotted. The department has enough experience and enthusiasm among fire department members, including both veteran firefighters and younger personnel, to remain successful.

In many parts of the country the Fire and EMS services grew up together and are integrated into a single organization. Integration of Fire services with EMS are becoming an efficient model for some communities. In Battle Creek the transport service grew up separately as the private entity "LifeCare" provides quality EMS transport.

The proper size of a fire department, including numbers of personnel and numbers of stations is open to subjective interpretation but there are national standards and comparisons with other cities that will be used to help Battle Creek "Right size" its force. Citizens are the ultimate decision-makers as they vote to accept or reject taxes to pay for their own protection. This study should provide guidelines for growth, and a blueprint for the future.

Fire protection, in general, presents an interesting history which is relevant to our study and which can be divided into three eras. The first era ("Era I") dates to the days of Benjamin Franklin, an early leader in the first American Volunteer Fire Service. Early in our history, the US citizenry depended upon fire protection in the form of vehicles such as hand-drawn hose carts and later, horse-drawn steamers brought to the incident location.

In a sense, this first form of fire protection has not changed much. Coast-to-coast across North America, fire departments both large and small back their apparatus into quarters, await the sound of a call, and rush to the scene when an alarm is sounded.

A second era of fire protection ("Era II") is represented by placement of fire suppression systems (sprinklers and alarms) inside of structures themselves. Commercial buildings, factories, hotels, schools, and any other buildings which present a potential for large loss or which represent a life hazard in terms of occupancy can be protected with automatic sprinkler systems. These will hold a fire at bay and often will summon fire suppression forces when the water flow in the piping system triggers an automatic alarm. This type of fire protection is immediately deployed and is capable of operating independently of the external protection provided by the fire department. Fortunately Many high-value occupancies in Battle Creek, including the cereal plants are sprinkler protected, greatly reducing the fire-suppression responsibility that would otherwise be present for the Battle Creek Fire Department.

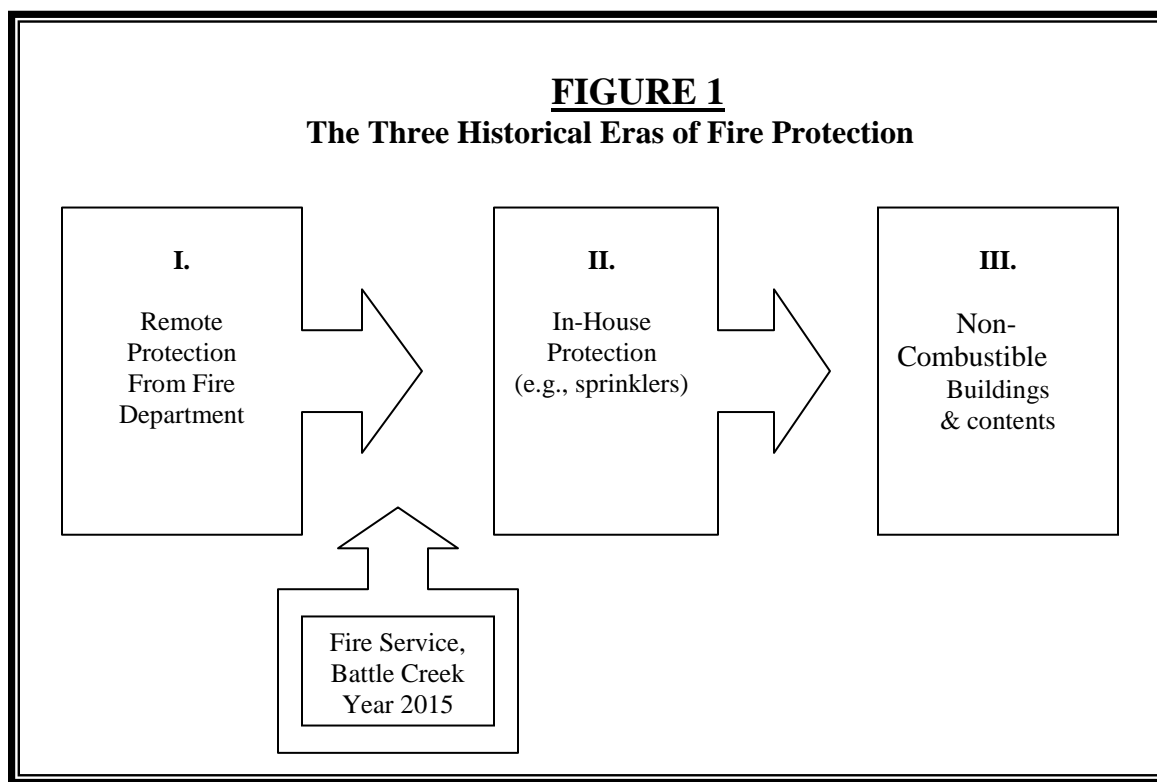
As part of Era II, smoke alarms, which are mandated in many commercial structures, have become popular in homes and have resulted in the early detection of many fires while in the incipient stage. This has allowed the occupants to take immediate action and is responsible for saving untold numbers of people and many homes from the ravages of fire.

An obvious tradeoff exists between in-house proximate protection, provided by sprinklers and alarms, (“Era II”) and the external protection provided by the fire departments (“Era I”). As new commercial development occurs over time in Battle Creek buildings will enjoy Era II internal protection, reducing the demands on firefighting forces. New homes should be mandated to have hard-wired, battery-backup ionization smoke alarms.

The third generation of fire protection will consist of a “non-combustible society”. (“Era III”). Currently, the technology exists to construct fire-resistant buildings, and to outfit these buildings with non-combustible furnishings. Coupled with this is the ability to treat all fibrous products such as clothing, paper, decorations or anything else that could conceivably be brought into a structure with a fire retardant process. (One such product called “no char ®” has been used to treat all of the barns at the Ohio State Fairgrounds).

Should we as a society ever agree to make the necessary expenditures to create a non-combustible society, then not only are fire departments from “Era I” rendered less important, but even sprinkler systems and in-house protection from “Era II” will likewise become far less necessary. The “Era III” will not enter into our study or equation since society is not even close to entering a non-combustible age. Overall, however, the historical result of the move toward Era II and III has been fewer fires, and less intense fires. Fire Departments have taken on EMS, Haz-Mat, Technical Rescue, and other functions to remain viable.

In the industrial area to the northwest in Battle Creek, for example, the response time from the department is longer than in other parts of the city further emphasizing the value of sprinkler systems or internal fire protection. **Figure 1** shows the three-step historical evolution, and the current positioning of the Fire Service, including Battle Creek



Era I. Fire Suppression still essential:

Battle Creek: Two die in Greenwood fire

Trace Christenson 8:35 a.m. EST December 5, 2014



Scene of a fire at 120 Greenwood St. after an overnight fire in which two people died.(Photo: Trace Christenson/The Enquirer)

16 CONNECT [3 TWEET](#)[LINKEDIN](#)COMMENTEMAILMORE

Two people, believed to be a mother and daughter, apparently died in an early morning Battle Creek house fire.

Firefighters were called at 12:34 a.m. to a two-story house at 120 Greenwood St. and found heavy black smoke and fire inside the house, according to Chief Dave Schmaltz. He said firefighters, believing people were inside, attempted to enter through a front and rear door but were unable to reach the victims.

The chief said they have been able to see one of the victims and believe the other woman is also inside the house. However Schmaltz said the house was badly damaged by the fire and officials are trying to determine if it is structurally safe to enter.

See **Appendix 3** for more information on Battle Creek's busy fire activity.

BATTLE CREEK OVERVIEW

Like many developing communities the City of Battle Creek has grown somewhat irregularly in terms of geographical borders and occupancy types. A merger between Battle Creek Township and Battle Creek City in 1982 gained efficiency overall but resulted in a preponderance of fire protection primarily within the original city section. New properties should be inherently safer than older due to better building codes and internal fire prevention systems such as sprinklers, but light-weight building materials and synthetic components tend to off-set these gains, replacing old challenges in firefighting with new.

There are two opposing arguments regarding the fire protection and emergency medical protection:

- **Argument No. 1:** Each and every citizen and business occupant within the corporate limits of Battle Creek deserves response times for Fire and EMS protection that are within national standard guidelines and therefore, regardless of how expensive and regardless of the infrequency of runs, enough fire stations will be constructed so that all residents and businesses have speedy response times.
- **Argument No. 2:** An opposing argument is that the location of fire and EMS units must logically include the frequency or the demand for the services from that facility. Locations should then favor frequent response zones,

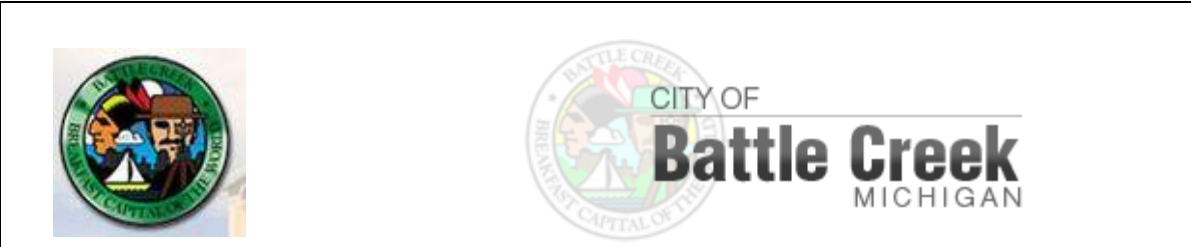
In the south-western portions of Battle Creek some sort of balance must be struck between these two arguments. The consultant has balanced these factors on an approximately 50/50 basis which will be reflected in the recommended station layout. In short we balance response time with service demand.

The rail lines are often used as an argument for ensuring quick response by having fire stations on both sides of the tracks even if they are close together. In some communities this is more emotional than factual. There are many reasons which can delay the response from the next closest unit, including the times they are busy with other calls. *Ordinarily and probably* fire units are available and *ordinarily and probably* the tracks are clear. For most of our clients, this is the condition upon which fire department operations must depend, and upon which sound fiscal policy must be established. In Battle Creek the trains are a more serious factor, and we do provide solutions.

The *average* train delay is about three minutes but Consultant William Kramer sat through a half-hour train delay on February 5th and believes this is a factor that must not be ignored in Battle Creek. While taxpayers should not have to fund redundant fire protection for these rare occurrences, other solutions are recommended. Citizens should not have to fund a second fire department to cover them when all city units are busy for an extended time period at a first structure fire. A good department has mutual aid, personnel recall and other back-ups and these types of contingency plans are being refined in Battle Creek.

Later we provide computer generated maps which show fire stations as they exist, as they could be changed to accommodate a new five or six station model with consideration to rail traffic. Below is a capsule snapshot of the Battle Creek Fire Department.

FROM THE CITY'S WEBSITE:



Battle Creek Fire Department serves the third largest incorporated land area in the State of Michigan. Service is provided to an inner-city urban area, a large industrial park, agricultural areas and shopping center development on the south side of the City. Opportunities exist for involvement in all facts of fire safety.

The Fire Department is professionally staffed by 78 personnel assigned to one of three 24-hour shifts for emergency response. In addition, there is one Fire Inspector, a Training Officer, two Battalion Chiefs and the Fire Chief. The Department staffs seven stations strategically located throughout the city. Administrative offices are located in Station #1 at 195 E. Michigan Ave.

The Department has in service a minimum of five Engines and a Fire Truck at all times, as well as up to three additional Medical Response Vehicles when daily staffing allows.

This team responds to over 5,000 calls annually and provides a variety of services including:

Fire suppression, Medical response, Hazardous material (haz-mat) response,
Rescue, Confined Space emergencies, Pre-fire inspections,
Fire prevention and Public Education

The Battle Creek Fire Department has been designated by the State of Michigan as one of 16 Regional Response Teams and, as such, receives additional equipment and training needed to respond to Weapons of Mass Destruction (WMD) events in the state. This designation allows the department to provide an improved level of haz-mat response.

A WORKFORCE SPREAD THIN

Battle Creek currently operates seven fire stations, including the airport. This spreads the workforce thin, compared to similar populated cities which, as we will see, operate with far fewer stations. Currently Battle Creek cannot meet NFPA (National Fire Protection Association) standards for minimum crew sizes, and with a first arriving unit, cannot meet OSHA and NFPA requirements for four firefighters on the scene to conduct interior fire suppression operations.

We will recommend fewer stations which meet staffing standards and provide a quality response pattern throughout all of the city. There is usually an angry outcry from the citizenry in any neighborhood if a municipality attempts to close a fire station. (And ironically there is often an outcry if a municipality wants to open a new station in a neighborhood.)

Often rank and file members of the fire department are themselves divided in the opinion on which alternative is better. In Battle Creek Local 335 remains open-minded but supportive of the national standards. During our interviews Battle Creek firefighters did make it clear that they consistently felt that the two-person and three-person crews were less effective and supported a move toward larger crew sizes, even at the expense of stations. A consolidation helps to accomplish this goal.

City Manager Fleury notes that improvement in Fire Protection is consistent with Battle Creek's role as the "First Beacon Community" (See inset next page) One factor remains clear. Battle Creek has long ago crossed the threshold where an on-duty career fire department is necessary to protect a community of this size. **Table A** below shows a national breakdown of department types by community size.

Table A
Coverage per population categories
by Career and Volunteer Fire Departments

Population Category	Number of Career Departments	Number of Volunteer Departments
1,000,000	36,100	100
500,000 to 999,000	35,900	4,150
250,000 to 499,999	24,750	2,800
100,000 to 249,999	47,100	3,000
50,000 to 99,999 (Battle Creek)	47,050	5,650
25,000 to 49,999	46,650	23,950
10,000 to 24,999	45,200	79,200
5,000 to 9,999	17,000	109,000
2,500 to 4,999	5,500	165,950
under 2,500	8,050	429,550

(Courtesy of National Fire Protection Association *U.S. Fire Department Profile*)



Battle Creek shines as nation's first Beacon Community

Local leaders and The Harwood Institute to tackle social ills in new, collaborative ways

Battle Creek, Mich. (February 28, 2013) – Grassroots and community leaders are joining with [The Harwood Institute for Public Innovation](#) and [United Way of the Battle Creek and Kalamazoo Region](#) on a three-year initiative targeting social issues. This collaboration, funded with a \$1.4 million grant from the [W.K. Kellogg Foundation](#), will make Battle Creek the first-ever Beacon Community – a national model for uniting individuals and organizations in applying Harwood practice principles to address community challenges.

“Tackling the most pressing issues we face, from education to employment to health care, depends on every facet of the community engaging in meaningful ways,” said Michael Larson, president and chief executive officer of the United Way of the Battle Creek and Kalamazoo Region (UWBCKR). “In coming together as a Beacon Community, Battle Creek will demonstrate how people can create change on issues that matter.”

The process begins March 5-7, when community leaders in Battle Creek gather at the McCamly Plaza Hotel for the [Harwood Public Innovators Lab](#). This three-day immersion in the core elements of the Harwood practice will equip the attending leaders with the tools and approach for identifying and addressing social issues in the next three years.

Participants include leaders from UWBCKR, [Kellogg Community College](#), [Battle Creek Area Chamber of Commerce](#), [City of Battle Creek](#), [BC Pulse](#), [Project 20/20](#) and many other organizations.

“We chose Battle Creek as the first Beacon Community because of the great partnership potential we’ve seen here through our work with the community over the past five years,” said Rich Harwood, president and founder of The Harwood Institute for Public Innovation. “People working together for the common good is a constant theme in Battle Creek. We believe this approach will achieve more impact, and we want to replicate our innovation with Battle Creek in other communities across the country.”

To find out more about Beacon Communities, please visit [The Harwood Institute's page](#)

BALANCING FIRE AND EMERGENCY MEDICAL RESPONSES

The City of Battle Creek runs an integrated fire/emergency medical service system. All across the country in communities large and small this has proven to be an efficient model adding considerable value to the service provided to the community. Unlike Battle Creek, most fire departments also staff ambulances and do EMS Transports.

Battle Creek does provide immediate first response for EMS so often personnel need to be shifted between Fire and EMS responsibilities depending upon the priorities of the moment. It is not unusual for The City of Battle Creek to experience simultaneous emergency medical runs. When this occurs firefighting resources become depleted in direct proportion to the escalating number of emergencies. Likewise, a serious fire would utilize any on-duty personnel and EMS runs would have to be handled by mutual aid units, or by LifeCare alone.



This happens in communities of all sizes all the time. A fire department can only afford to staff and equip itself for the ordinary and probable, not the unusual times when resources become totally depleted and calls are “stacked.” Battle Creek has assistance available from other communities and can backfill its stations with mutual aid units during such times.

LEFT: EMS transport in Battle Creek is provided by *LifeCare*, a private provider

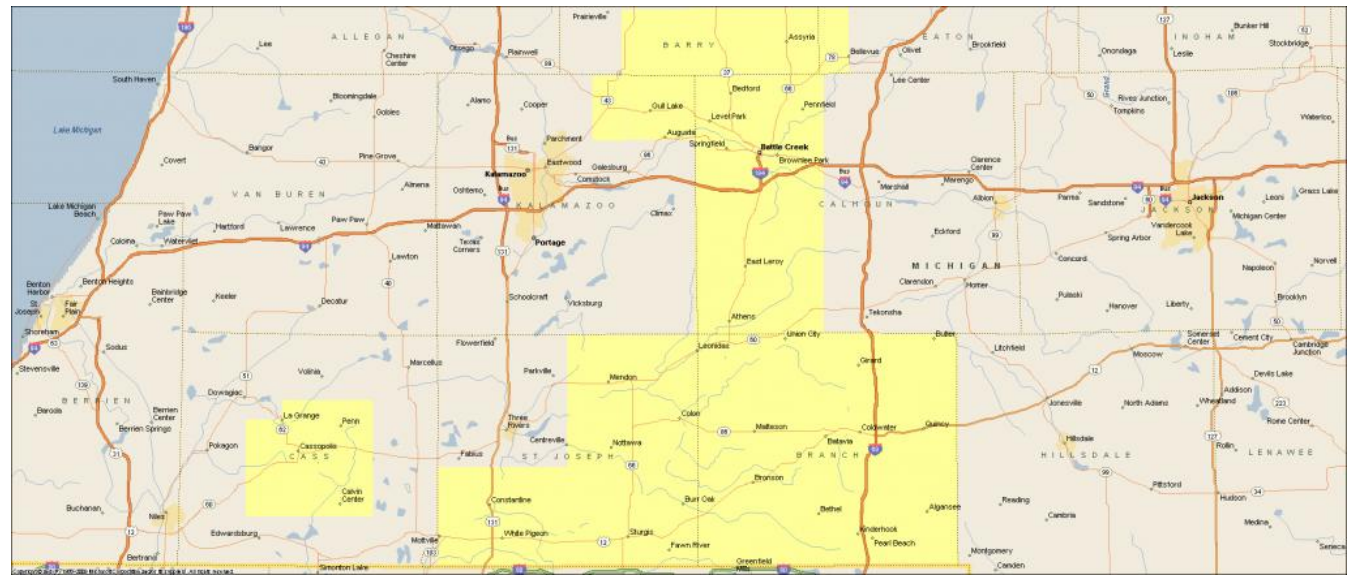
LifeCare is on solid footing for now but as a private corporation has the right to go out of business. Battle Creek should have a "Plan B," perhaps using firefighters.

In 2013, MedCorp, a "private ambulance service that transported more than a half-million patients a year in six states abruptly shut down without explanation, leaving dozens of cities and towns scrambling for medical transportation options without a word of warning." See **Appendix 4** for the story.

Someday a different means of hospital transport may be necessary. , but for now, if the fire department assumes these duties, it will be a financial loss to Life Care and a corresponding gain for the city. See **Appendix 5** for a summary of a study by Battle Creek Local 335, showing the methodology and relevant financials. The attractive income dollars from EMS transports may not always be there. See **Appendix 6**, for example, where a recent article depicts new Medicare reimbursement restrictions, an indicator that ambulance service income is not guaranteed to remain at current levels. In **Appendix 7** we include information from Plano, Texas on a new concept called “Community Para medicine”

"Community Paramedicine" is designed to substitute "wellness checks" or house calls to reduce needless uses of the 911 transports. This is a possible new role for Battle Creek firefighters, even though it would require specialized paramedic training. There is a tremendous "can-do" attitude among the Battle Creek Fire Department, even when stretched thin. Several members commented on the adaptability of the fire department during storms and other times when simultaneous emergencies inundate the city.

Below are a few illustrations regarding LifeCare, the EMS transport service for the City of Battle Creek and many Michigan communities.



ABOVE: LifeCare is the primary 911 provider to over 1400 square miles in all or portions of 7 counties in Southwest Michigan

LEFT: Sampling of LIFECARE fleet.

At times engines are used for Battle Creek's response to medical emergencies, causing well-intentioned citizens to question whether this is a waste of resources. It is actually a cost savings measure. The City of Battle Creek Fire Department has adopted a sensible response policy sending adequate size crews to handle medical emergencies, even when some of those crew members arrive on a fire fighting vehicle. See **Figure 2** on the next page for the protocol.

In the City of Battle Creek approximately 95% of the total budget is payroll expenses. The other 5% pays for the fire fighting equipment, station maintenance, supplies, fuel and so forth. While at first blush it may seem extravagant to have a full size pumper or aerial ladder truck on an emergency medical call this must be taken in context. The crews on the fire vehicle remain mobile, versatile, and available for fire calls.

Figure 2 -- Battle Creek Fire Company EMS Protocols

Fire department EMS Engine or rapid response vehicle Company provides immediate response for Emergency Medical Services (EMS) in the City of Battle Creek, and hands off patients to LifeCare for transport.

Urgent response for the following:

- Cardiac Emergency (Heart Attack, Chest Pain, Shortness of Breath, etc)
- Motor Vehicle Accident with reported entrapment or serious injury
- Respiratory Emergency (Asthma, COPD, Shortness of Breath, etc.)
- Altered Level of Consciousness (Stroke, Drug, Overdose, Generally Unresponsive, etc.)
- Motor Vehicle Accident with reported entrapment or serious injuries

Response without delay for the following:

- Lifting assistance, Obese Patient
- Minor injuries or illnesses
- Motor Vehicle Accident reported with no injuries or minor injuries

Protocols:

- Station Officer determines the vehicle used for response
- Stated criteria is subject to modified response, as the Officer in Charge may deem appropriate.
- Motor
- First ambulance response in Battle Creek by LifeCare will normally consist of two personnel.
- Battle Creek may accompany patients in LifeCare vehicles when needed for life-saving emergencies
- Any Battle Creek Officer may request additional resources once they determine need.
- A fire officer will supervise all extrication operations



LifeCare Headquarters at 330 W. Hamblin Ave. in Battle Creek



Photo of Combination pumper-ambulance used by Sycamore Township in Hamilton County, Ohio. This has merit in some departments but is not recommended for Battle Creek because of cross-contamination in two directions (fire debris to patients and patient pathogens to firefighters.)

While the total annual fire for year 2014 was \$8,912,825.00, the vast majority of this nearly nine million dollars was for personnel. The total fuel budget for the entire fire department fleet is a small fraction. Hence if fire vehicles make four times as many emergency medical runs as fire runs a 400% increase in the return on the huge salary investment is given to the community. Sending an accompanying engine to EMS calls causes the fuel to increase by \$20,000 to \$30,000 and we factor in the wear and tear and depreciation on apparatus perhaps we would have as much as a \$200,000 per year total investment in the fire companies making EMS runs, exclusive of the salaries. Hence by sending these engines, the fuel and maintenance budget increases by about 60% but the total fire department budget increases only by about 2%. In exchange for this 2% we have this tremendous four-fold return on the major investment of salaries..

RESPONSE DATA

As in all cities with multiple fire stations, some are busier than others. In Battle Creek it is Station No. 2 which has the current bragging rights as to being the busiest. There are six zones or districts associated with the stations representing approximately a “first due” area, with Station 7 being the airport.. **Table D** below provides a breakdown of the districts.

Table B -- Battle Creek Fire Dept. Calls per Station							
	Incidents per Year				Average Incidents per Day		
<i>Year</i>	<i>2004</i>	<i>2009</i>	<i>2014</i>		<i>2004</i>	<i>2009</i>	<i>2014</i>
Station 1	N/A	N/A	532		N/A	N/A	1.46
Station 2	1024	1128	1726		2.81	3.09	4.73
Station 3	573	1083	1086		1.57	2.97	2.98
Station 4	1096	998	1393		3.00	2.73	3.82
Station 5	657	593	759		1.80	1.62	2.08
Station 6	705	534	999		1.93	1.46	2.74
Station 7	N/A	N/A	4		N/A	N/A	N/A
Total	4055	5152	6499		11.11	11.88	17.79

On the Next Page we show a breakdown by run type for the years 2004, 2009 and 2014 in the Charts listed as **Tables C-1, C-2 and C-3**. (Consultants considered first arriving station so that incident totals would equal "Calls per Station" Totals in 2004 and 2009. There was some redundancy in medic and engine overlap for 2014, but the trends are quite clear either way.

Table C-1 Calls by Type in 2004

Call Type (Category)	Number of Calls	Percentage	Total-Year
Fires	238	4.54%	4055
Overpressure rupture, explosion, overheating - no fire	9	0.17%	4055
Rescue & Emergency Medical Service	3167	60.39%	4055
Hazardous Condition (No Fire)	300	5.72%	4055
Service Call	305	5.82%	4055
Good Intent Call	860	16.40%	4055
False Alarm & False Call	354	6.75%	4055
Severe Weather & Natural Disaster	2	0.04%	4055
Special Incident Type	9	0.17%	4055

Table C-2 -- Calls by Type in 2009

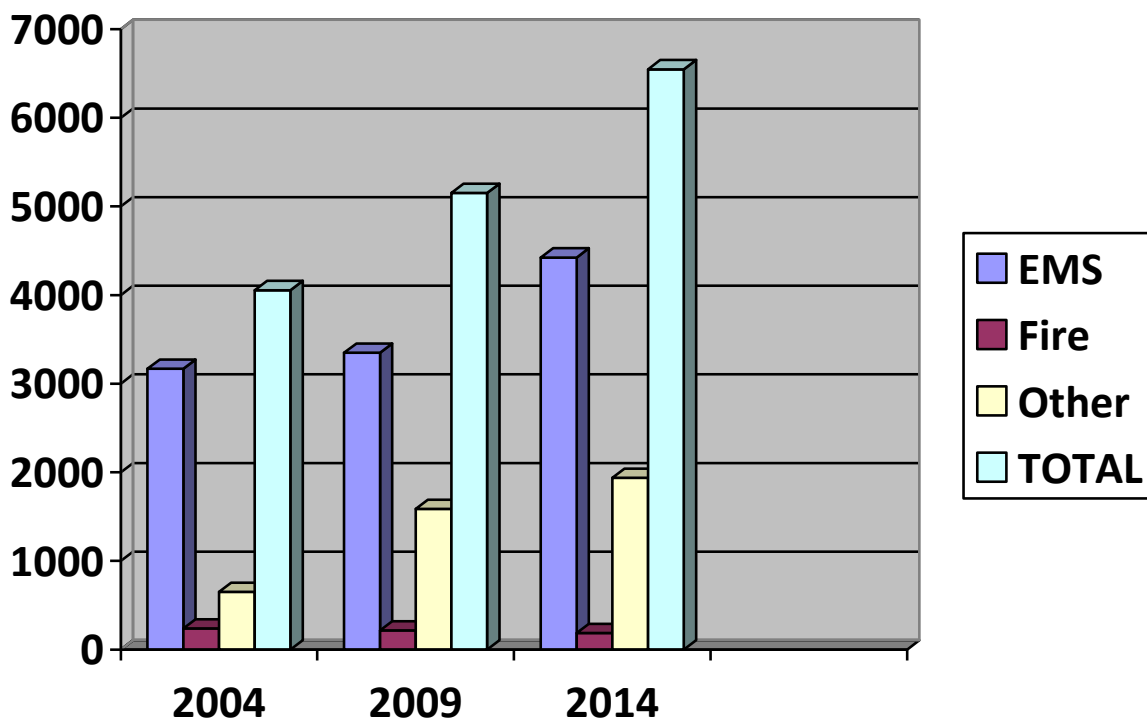
Call Type (Category)	Number of Calls	Percentage	Total-Year
Fires	215	4.17%	5152
Overpressure rupture, explosion, overheating - no fire	5	0.10%	5152
Rescue & Emergency Medical Service	3350	65.02%	5152
Hazardous Condition (No Fire)	178	3.45%	5152
Service Call	355	6.89%	5152
Good Intent Call	777	15.08%	5152
False Alarm & False Call	248	4.81%	5152
Special Incident Type	24	0.47%	5152

Table C-3 -- Calls by Type in 2014

Call Type (Category)	Number of calls	Percentage	Total-Year
Fires	187	2.86%	6547
Overpressure rupture, explosion, overheating - no fire	6	0.09%	6547
Rescue & Emergency Medical Service	4424	67.57%	6547
Hazardous Condition (No Fire)	267	4.08%	6547
Service Call	302	4.61%	6547
Good Intent Call	967	14.77%	6547
False Alarm & False Call	383	5.85%	6547
Special Incident Type	11	0.17%	6547

The "total" columns in **Figure 3** below show that the Battle Creek fire companies have grown busier each year with similar breakdowns between Fire, EMS and other categories. In most fire departments, actual fires are declining, while in Battle Creek they are remaining relatively constant and are declining only as a percentage of overall activity.

**Figure 3-- Battle Creek Fire Department Responses --
Abbreviated 10-year Trend**



The fire and EMS services delivered by the Battle Creek Fire Department are of high quality and are delivered quickly throughout the city. On several occasions the consultants watched crews in action and were impressed with their knowledge and skill.

When depth and/or additional resources are needed for major or simultaneous emergencies, neighboring fire departments and rescue squads are available even though response times from neighbors can be lengthy and currently mutual aid units are seldom needed or requested.. The City of Battle Creek, in turn, provides back up assistance to other Fire and EMS Departments. Chief Schmaltz is working on a MABAS (Mutual Aid Box Alarm System) which will create automatic response into and out of Battle Creek. The City will be subsidizing the surrounding areas but depth will be available for the City when needed.

INTRO. TO ARCHITECTURAL REVIEW OF STATIONS

As the community grows, larger numbers of high-value homes and new commercial properties will need to be protected. Stations which have admirably served Battle Creek, some since the early 1900's, will need to be replaced so that the fire department can continue to serve both established and new citizens, both residential and corporate. Photos of the six existing stations follow on three pages:



BCFD Station 1



BCFD Station 2



BCFD Station 3



BCFD Station 4



BCFD Station 5



BCFD Station 6

Battle Creek Fire Station History

Architect Nestor Melnyk of the MSA firm along with the fire department consulting team visited the Battle Creek fire stations and found that none of them completely met the newer standards for use, safety, and training as they exist. This provides additional impetus for proposed replacement and consolidation that is recommended later in this report.

We applaud current consideration for replacing or upgrading the existing fire facilities. This will ensure that facilities comply with current building codes, including ADA requirements. Another factor is emergency power in the facilities which should be a part of any new or refurbished facility. .



Commercial Gear Washer must now join the Household Linen Washer to comply with new safety requirements

New construction may seem expensive, but we can show mathematically how *inexpensive* the facilities are, compared to the personnel on duty. If the facilities are conducive to training, provide comfortable living standards, and improve morale, then a better-trained, more highly motivated employee is on duty. This dimension of quality multiplies across all members using the improved facilities..

MSA Architects have conducted a thorough review of all six municipal stations and note that none meet current occupancy standards. Also of note is the fact that as currently occupied they enjoy "grandfather status." but would have to be made entirely code-compliant, including any new or existing space, at such time as additions or renovations are made. The complete MSA Architectural Analysis is found as a complete separate document in **Appendix 20** at the end of this report. Here is an introduction to this comprehensive report:

MSA Architects



AIA Ohio

A Society of the American Institute of Architects

GOLD MEDAL FIRM

Battle Creek Fire Department Fire Facility Assessments



January, 2015

MSA Reference #14.00

INTRODUCTION:

On Thursday, January 8, 2015, MSA Architects (MSA,) represented by Nestor Melnyk AIA, LEED AP BD+C performed walk-through reviews of Battle Creek Fire Department's existing facilities, including the following fire stations:

- *Station #1 195 E. Michigan Avenue*
- *Station #2 145 Washington Avenue*
- *Station #3 222 Cliff Street*
- *Station #4 8 S. 20th Street*
- *Station #5 1170 W. Michigan Avenue*
- *Station #6 2401 Capital*

The purpose of the visits was to conduct evaluations of the buildings from a physical facilities perspective, including their code compliance, ADAAG compliance, functionality, and general physical condition. In addition, overall structural and MEP (mechanical, plumbing, and electrical) conditions of the buildings were reviewed.

This report is based the observations from the walk-throughs as well as information obtained from Chief Dave Schmaltz, Battalion Chief Howard Holt, and other staff available during the walk-throughs. Existing building documentation was requested; however, no building plans were available for review. This report should serve as a generalized overview based on these observations. Detailed field measurement, documentation, and extensive analysis were not completed at this time. Should the City of Battle Creek decide to pursue renovations or additions to these structures, a more detailed and thorough building analysis is recommended, which can be focused on issues and characteristics specifically relevant to the anticipated work.

Executive Summary

The following facility assessments were conducted to review overall conditions of the City of Battle Creek's fire stations with respect to current building codes and fire facility standards. The assessments were completed by visual observation, are general in nature, and are not to be considered thorough review or analysis of the buildings. The assessments compare the existing facilities with standards for new fire station design and overall code compliance. Detailed code review or analysis was not conducted within the scope of these services.

Overall the city's fire facilities are generally dated but obviously functional. Several significant building standards issues have been observed with respect to current codes; however, existing construction is grandfathered unless work has been completed without proper approvals or authorities having jurisdiction find otherwise. No serious immediate threats to the health, safety and welfare of the occupants were noted.

The most significant issues are found at the two oldest fire stations, Stations #2 and #3. Those stations are found most deficient in compliance with both current codes as well as with current fire facility design standards. Due to costs and practical limitations of the buildings as well as their historical character and value, any significant upgrades to these buildings to achieve current fire station design standards would be extremely cost-prohibitive. Their best use would be a function that does not require substantial modifications or additions other than repair, maintenance, and upgrades of existing construction.

Stations #1 and #6 are the most current with respect to both evaluations. In general, those two stations can be most successfully brought up to date with renovations and additions.

Upgrades to Stations #4 and #5 will only marginally be effective. Station #4, although well-built and adequate in size, will require significant demolition and renovation/new construction, which will likely result in an unfavorable cost-benefit analysis. Unless only minor adjustments are planned, this station will require careful planning and design to achieve a cost-effective solution. Station #5, the smallest of the stations, could be modified with an addition to the side and possibly rear of the station to achieve positive results. Some structural modification will likely need to occur within the existing building to bring the structure up to current Essential Facilities codes; however, its simple design and small size would likely mean the upgrades would not be cost prohibitive.

FIRE STATION LOCATIONS

The existing locations of fire stations in Battle Creek can be improved. Because Fire Stations tend to be built in populated areas they are usually well located when objectively analyzed. In Battle Creek, a merger of the City and Township created a new composite area in which the stations are centered more in what was formerly City and fewer are in the less populated former township area. Improvements are strongly recommended and are outlined here.

Map No. 1-A shows the existing Battle Creek station locations with the surrounding polygons denoting separate 4-minute and 8-minute response times. (*Darker zones are the four-minute time; lighter zones are the eight-minute times.*)

Map No. 1-B provides more detail in the four-minute zones showing overlap in parts of the city, and deficiencies further west. The maps shows that the higher populated portions of the city do fall within the four-minute recommended arrival of the first engine, but none of the arriving individual fire companies are adequately staffed to standard.

Battle Creek Proposed Fire Station Configuration

See Map Nos. **2-A** and **2-B** (Option 1) and **2-C** and **2-D** (Option 2) :

New Station 101 Stations 1,2 and 3 are consolidated into a new station at or near the edge of Washington Heights, (Option A or B) The busy railroad is in proximity to this station but placing it on one side or the other of the strategic underpass will permit travel in all directions. **Key point: With either option full staffing would be made possible for first arriving unit in Washington Heights and central city.**

New or refurbished Station 102: Station 5 is replaced at or near existing location

New or refurbished Station 103: Station 6 is replaced at or near existing location

New Station 104: Existing station 4 is consolidated with the Airport station at or near the intersection of Helmer Rd. S. and E. Airport Rd, becoming a joint airport/municipal facility. (If this is staffed with four persons, ordinarily and probably there will be at least four persons available for airport incidents rather than the two currently. In the event of a municipal fire one person can remain behind to staff the ARFF vehicle and keep the airport open, while one is freed to augment the previous complement of municipal staff)

New Station 105: Constructed at or near the intersection of Brady and Dickman
In the future, if development and population increase in the Northwest portion of the city,

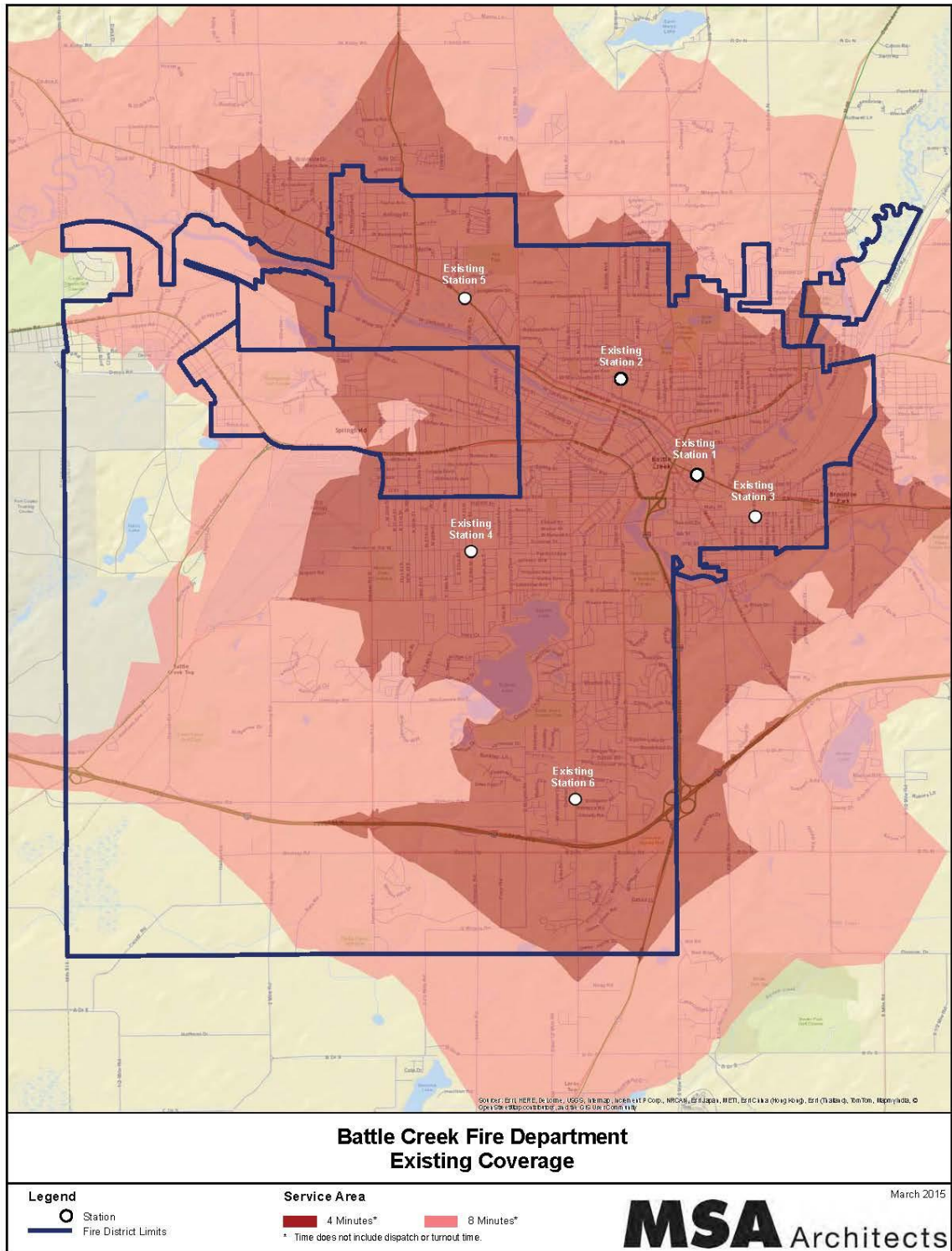
Future Station 106, if there is ever significant development or population growth to the southwest.. Depending upon access roads at the time, use property in the vicinity of:

Option A: Station 106: Renton and Watkins **OR**

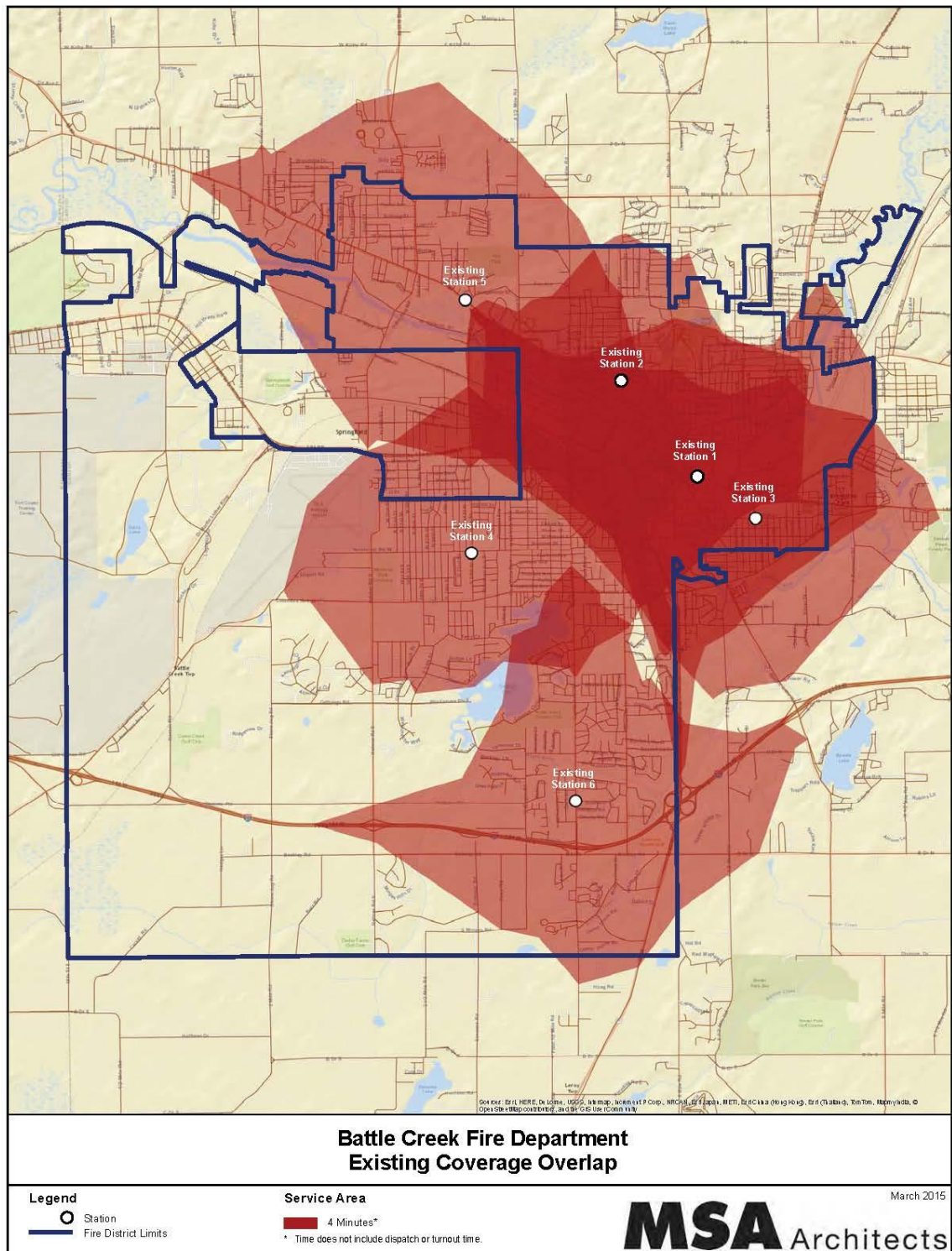
Option B: Station 106: Stone Jug and Beckley

Map Nos. 2-A and 2 B or 2-C and 2-D show how more consistent response times can be achieved with fewer stations. In **Appendix 8**, additional mapping shows time zones from individual stations.

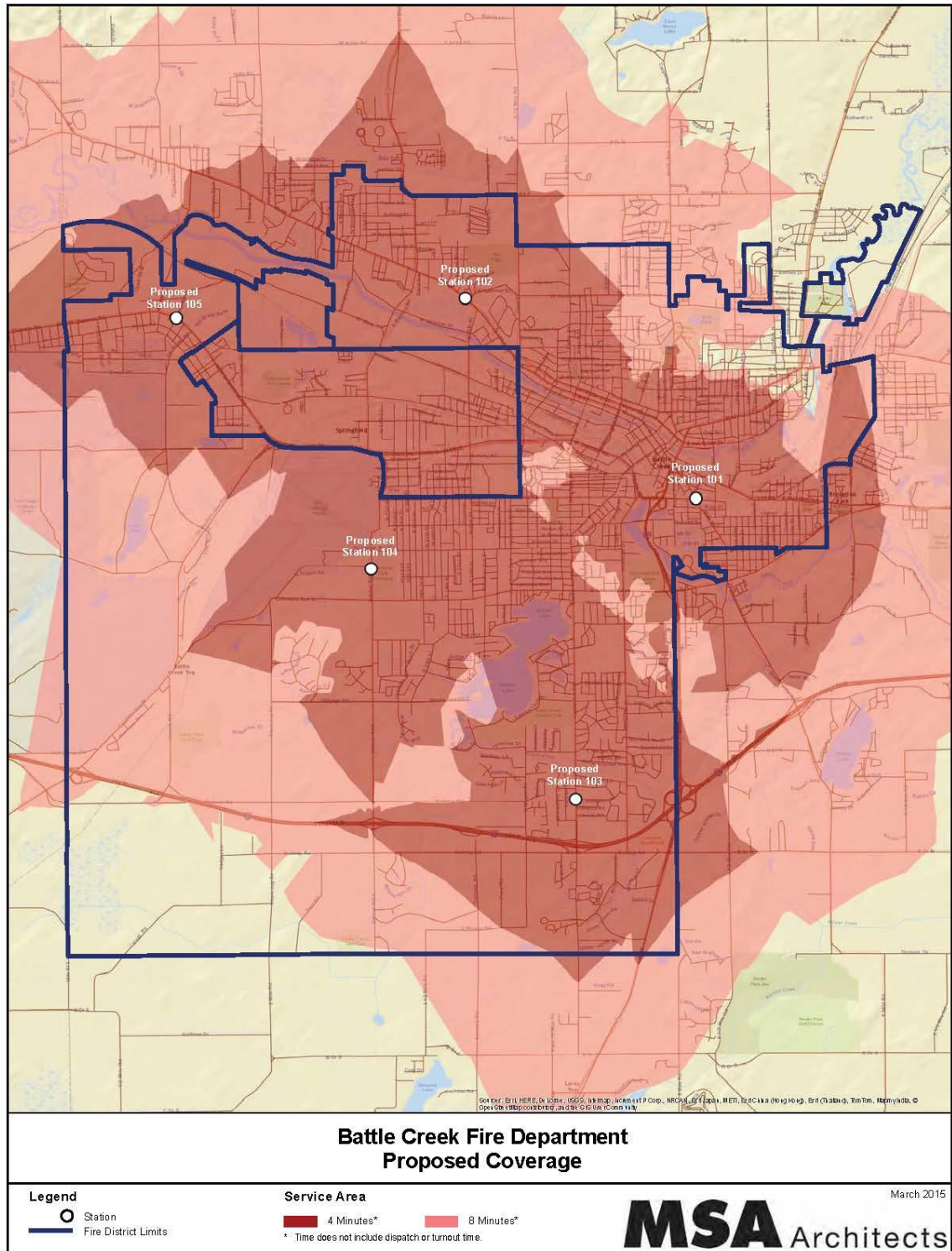
MAP No. 1-A Existing Coverage for 4 and 8-minute response times:



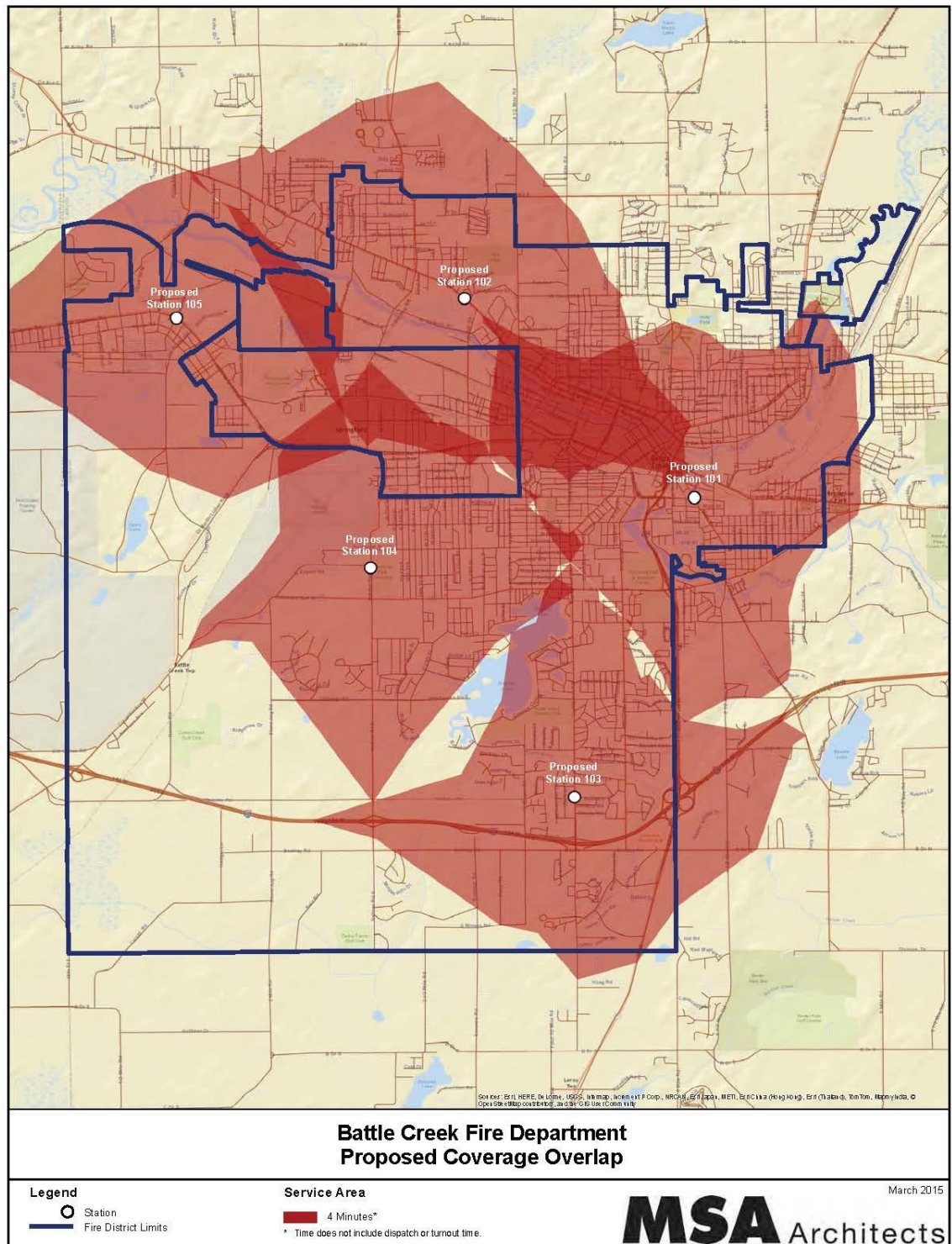
MAP No. 1-B Existing Coverage for 4-minute response times, showing overlap in Central City, and lack of compliance further west.



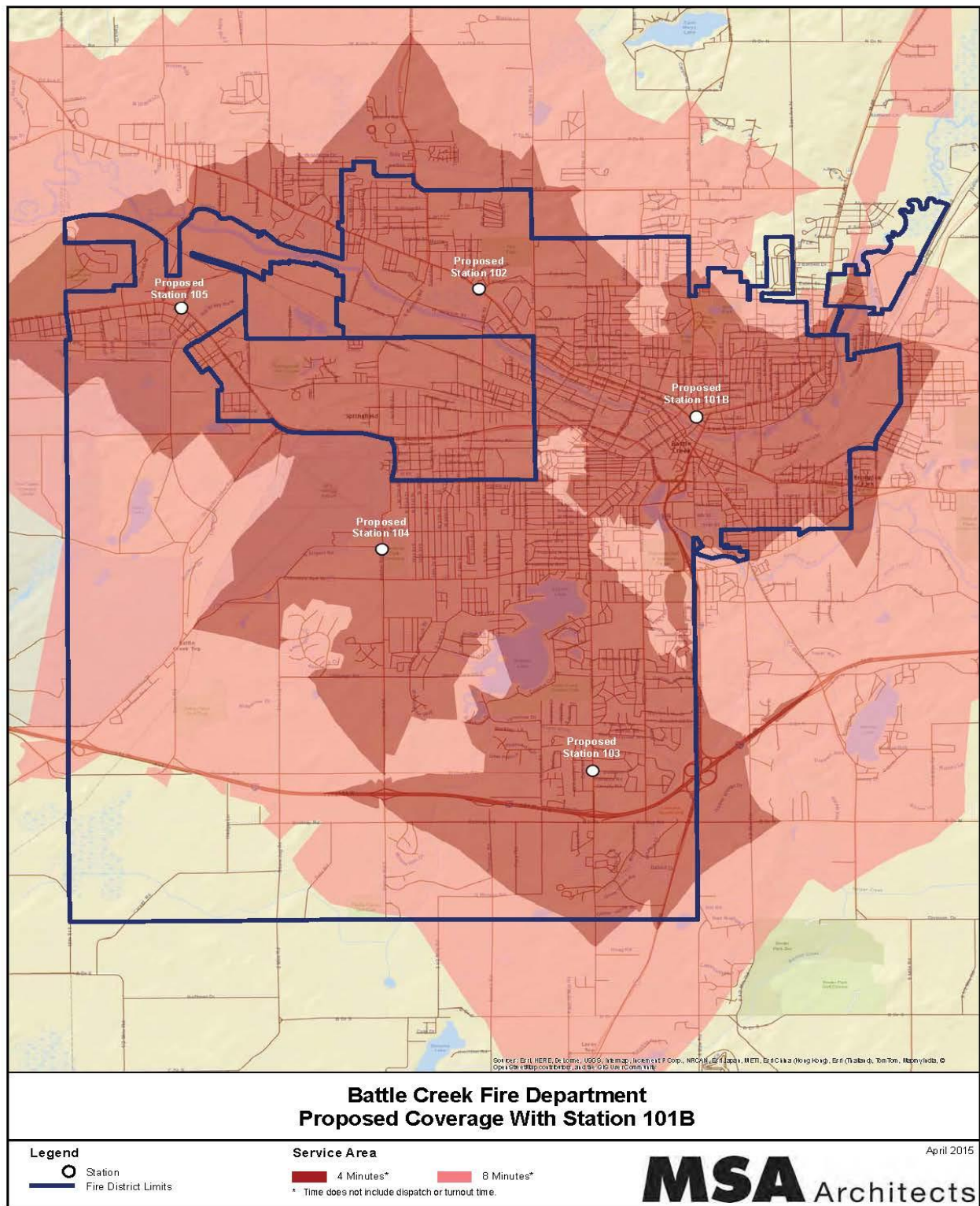
MAP No. 2-A: Option 1 Proposed coverage showing 4-minute and 8-minute response times: (Stations 101 A, 102,103,104,105)
Central Station is at Main and Dickman



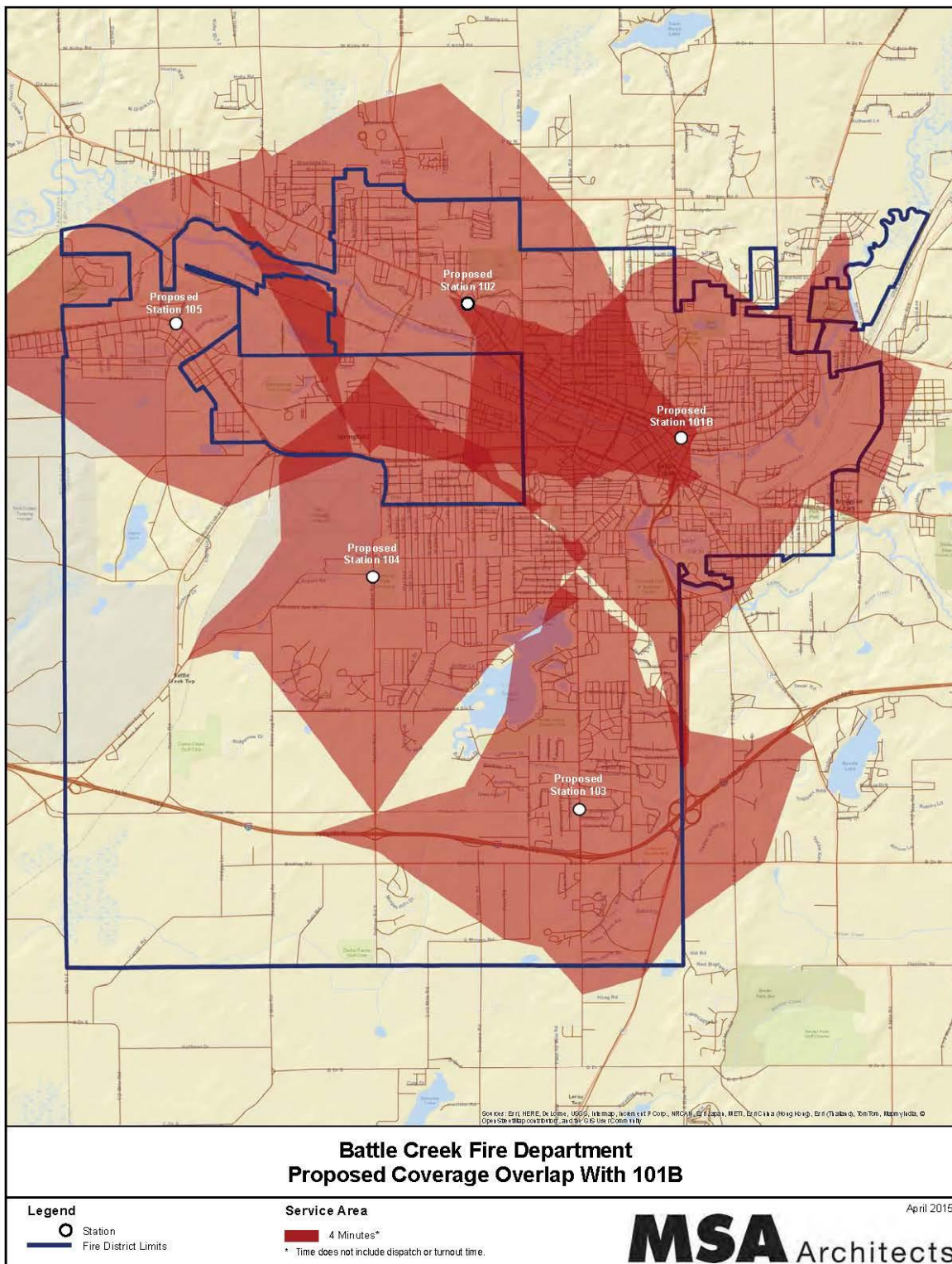
MAP No. 2-B Option 1 Proposed Coverage showing 4-minute response times, reducing overlap and improving coverage overall (Stations 101 A, 102, 103,104,105)



MAP No. 2-C Option 2 Proposed Coverage showing 4-minute and 8-minute response times, (Stations 101 B, 102,103,104,105) Central Station is in the vicinity of Capital and North



MAP No. 2-D Option 2 Proposed Coverage showing 4-minute response times, reducing overlap and improving coverage overall (Stations 101 B, 102,103,104,105)



Below: Lot available for new Headquarters Station at Main and Dickman Sts.



Over time a Capital Investment Program should be undertaken to replace older stations in the City's preferred order:



1. Construct a new Headquarters station replacing No. 1, 2 and 3 at Main and Dickman Sts ("Option 1"). An alternate site closer to Washington Heights would be somewhere near Capitol and North ("Option 2") Both improve staffing for Washington Heights and central city, with either location looking favorable on the maps just seen.

2. Construct a new station to replace Station 4 and consolidate its operations with those at the Airport at a location on the east side of the airport. A two-directional bay configuration would ensure that airport security would be maintained.

3. Renovate or replace Station 5 at or near the existing location.

4. Renovate or replace Station 6 at or near the existing location.

5. A later phase would be a completely new station to the Northwest near the industrial zone. (This may not be affordable any time soon, In the meantime an automatic response agreement should be enacted with the Fire Department at the VA facility)

6. The final station in the current City of Battle Creek would be placed in the Southwest area, but not until such time as there is population and development to justify it. This could be decades away and may never occur.

RAILROAD CROSSING BLOCKAGES

Because railroad crossing street blockages are more of a factor in Battle Creek than in other jurisdictions studied by the consultants, we devote a special section here to this concern. In the mapping section we advocated the location of a new headquarters station on one side or the other of a key overpass. We now also suggest additional technology which can be employed to help alleviate the situation. Consultant Randy Hanifen investigated "**Railroad Crossing Blocked-Technology Solutions**" and provides the following information:



Within the city of Battle creek, railroads traverse many of the response routes for the fire department. Needing to make decisions for response routes based on the railroad crossings, the consultants have researched options that would allow a responding fire crew to know if a train is blocking the crossing and take an alternate route prior to leaving the fire station. Some of the options available include the use of Wireless IP camera systems that will allow the viewing of the crossing via cameras in the fire station and on a Mobile Data Computer in the apparatus. Because you could have multiple crossings, the wireless IP camera system would allow dispatch centers and multiple fire stations and apparatus to

view multiple cameras simultaneously. One company that provides equipment for this solution is DLink. Their webpage displaying equipment options can be found at <http://us.dlink.com/business-solutions/ipsurveillancesolutions/>

A second system researched involved the installation of a wireless transmitter on the crossing gates that would activate a signal in the fire station, thus allowing the crews to make a routing decision based on the crossing. This option would only alert the personnel in the station and would not allow actual visualization of the tracks. It would allow the officer to make a more informed decision. However, this option is low cost and very simple to install. Wireless transmitter kits can be purchased from many vendors. One option for wireless sensor equipment can be found at <http://www.oemsensors.com/products/wireless-sensors/>

As technology continues to enhance government operations, the City of Little Rock, Colorado found success in linking their railroad crossings to their traffic signaling to ease traffic congestion. To view the article explaining this traffic enhancement, go to <http://www.imsasafety.org/journal/ja05/ja0511.pdf>

Costs are estimated to be between \$19,000 and \$25,000. We can see that the 1.7 million dollar cost of staffing an additional station would be paid for in 5.36 days. The use of technology can enhance decision making throughout the organization and this provides one example of its use to overcome train delays within the city of Battle Creek.

BATTLE CREEK QUIET ZONES

Citizens of Battle Creek may notice some changes regarding railroad crossings that are at least indirectly related to our study. Mr. Lawrence Bowron, Transportation Director for the City of Battle Creek is directing the creation of quiet zones which in effect will substitute various signage improvements and other upgrades at railroad crossings to compensate for train whistles, which can be reduced or eliminated. Mr. Bowron provides the following information:

"Many communities have a long and rich history with both passenger and freight rail companies who have connected them with the rest of the world for years. Much has changed in the rail industry over the years but one thing that has not is the footprint of those train "whistles" which to some may be nostalgic and to others may be...well...too loud. The Battle Creek Quiet Zone will be comprised of three consecutive Quiet Zones and cover more than a dozen crossings. After implementing additional safety measures at crossings which may include traffic control devices, signage, and other measures the trains will no longer be required to sound their horns as they approach these crossings. Should the train engineer see a safety issue that justifies sounding the horn they are free to do so but the sounding of the horns at the crossings will no longer be a regular practice." The following information is drawn from this link.
<http://www.fra.dot.gov/Page/P0104>[less](#)

The Train Horn Rule and Quiet Zones

In response to an increase in nighttime collisions at locations with state whistle bans, Congress enacted a law that required FRA to issue a Federal regulation requiring the sounding of locomotive horns at public highway-rail grade crossings. It also gave FRA the ability to provide for exceptions to that requirement by allowing communities under some circumstances to establish "quiet zones."

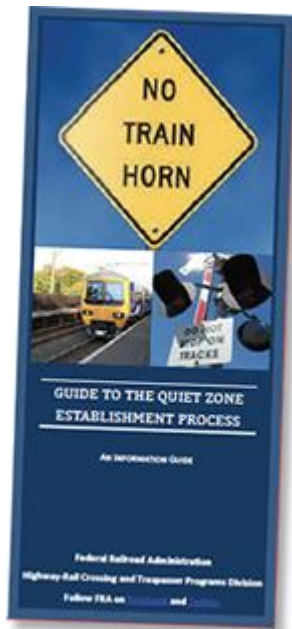
The Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings, published in the Federal Register on April 27, 2005, was intended to:

- Maintain a high level of public safety by requiring the sounding of locomotive horns at public highway-rail grade crossings;
- Respond to the concerns of communities seeking relief from train horn noise by considering exceptions to the above requirement and allowing communities to establish "quiet zones"; and
- Take into consideration the interests of localities with existing whistle bans.

The Use of Locomotive Horns

Under the [Train Horn Rule](#) (49 CFR Part 222), locomotive engineers must begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings.

If a train is traveling faster than 60 mph, engineers will not sound the horn until it is within ¼ mile of the crossing, even if the advance warning is less than 15 seconds.



There is a "good faith" exception for locations where engineers can't precisely estimate their arrival at a crossing and begin to sound the horn no more than 25 seconds before arriving at the crossing.

Train horns must be sounded in a standardized pattern of 2 long, 1 short and 1 long blasts. The pattern must be repeated or prolonged until the lead locomotive or lead cab car occupies the grade crossing. The rule does not stipulate the durations of long and short blasts.

The maximum volume level for the train horn is 110 decibels which is a new requirement. The minimum sound level remains 96 decibels.

Establishing Quiet Zones:

The final rule also provides an opportunity for localities nationwide to mitigate the effects of train horn noise by establishing "new quiet zones." "No horn" restriction which may have existed prior to the establishment of the rule may be qualified to be "pre-rule quiet zones". In a quiet zone, railroads have been directed to cease the routine sounding their horns when approaching public highway-rail grade crossings. Train horns may still be used in emergency situations or to comply with other Federal regulations or railroad operating rules. Localities desiring to establish a quiet zone are first required to mitigate the increased risk caused by the absence of a horn.

Regulations:

Federal Regulations about the Use of Train Horns at Crossings

- e-CFR [part 222](#) - Train Horns at Crossings and Quiet Zones
- e-CFR [part 229.129](#) - Sound Level Requirements for Train Horns

REPLACING FIRE STATIONS

Stations grow old and need to be replaced. In growing communities, additional stations can be needed but in Battle Creek the need is more in the form of replacement as opposed to additional new facilities with added personnel. We can show mathematically how *inexpensive* the facilities are compared to the personnel on duty. If the facilities are conducive to training, provide comfortable living standards, and improve morale, then a better trained, more highly motivated employee makes the emergency responses. This dimension of quality can then be multiplied across all members using the improved facilities.

In departments with paid personnel, when the cost of a station is plotted next to the cost of the personnel who will staff that station over its lifetime, the investment of the building becomes relatively insignificant. We could estimate that a new fire station is likely to cost about \$3.5 million. While this may seem to be a major investment, if the building will last 50 years the cost per year on a simplified straight-line basis is figured as follows:

$$\textbf{Building: } 3.5 \text{ million} \div 50 = \textbf{\$70,000 per year}$$

Let's say this building will conservatively house an average crew of five persons, for 24 hours a day, earning an average of \$85,000 per year. Three shifts plus earned days off, sick time, vacation leave and an overtime factor create a multiple of four. Hence the following calculation:

$$\textbf{Salaries: } 5 \times 4 \times \$85,000 = \textbf{\$1,700,000 per year}$$

These are simplified calculations. In actuality the station could have more or fewer personnel, the wages could average more, and will certainly rise over fifty years, etc. but there is no mistaking the high cost of personnel vs. facilities. As this station continues its life cycle over 50 years, its cost is dwarfed by personnel costs that would continue to accelerate. Hence, it makes no sense to cut corners on construction, or accept a substandard location for a new station.

Because site selection represents an investment far greater than the real estate and building, selecting a site is an important investment, especially if a non-optimal location results in higher response times. Battle Creek is fortunate to have property already located well for fire stations as proposed.

The overall layout and orientation of the facility is important to facilitate the rapid egress of emergency equipment. Drive-through bays are becoming increasingly more important for egress, reduced wear and tear on vehicles, improved visibility, and reducing the hazard of stopping traffic and backing apparatus with personnel present.

ESTIMATED COSTS

Fire station facilities are typically in the \$225 to \$250 per square foot range based on local public contract laws. Pre-fabricated facilities such as Morton and Butler buildings can cost less, and though occasionally used, normally do not provide much in savings, especially when they are going to be occupied with paid personnel, and are a small part of the total investment as we just calculated.

SQUARE FOOTAGE REQUIREMENTS

Although square footage requirements vary with the type of department and personnel needs, adequate space is critical to minimizing the need to expand unnecessarily in the future. Any new stations for Battle Creek will factor in future needs.

As an improvement over the aging stations of the existing fire companies, a new station can be used to strengthen community support.

MSA Architects work closely with **Kramer & Associates** in matching building designs to specific fire department needs. Real estate and facilities are always a good municipal investment for a city. On the following page you will see some of the stations designed by MSA for communities in the Greater Cincinnati area.



Basic Fire Station Recently constructed for Marshall Township, MI. to the east of Battle Creek.



Affordable Station Designed by MSA for Fairfax, OH



Fire Station Designed by MSA for Delhi Twp., OH



Fire Station Designed by MSA for Mason, OH

BATTLE CREEK FIRE DEPARTMENT APPARATUS

Consultant Michael A. Washington reviewed the fleet of the Battle Creek Fire Department (BFD) and found a serviceable inventory of front-line fire apparatus, matched well to community needs, but aging quickly. The reserve fleet, i.e. the vehicles utilized to temporarily replace the “front-line” fleet, were ALL “functionally obsolete” by the National Fire Protection (NFPA) 1901 Standard of Fire Apparatus. These Standards are found in **Appendix 9**.

This consultant feels that replacement of vehicles should be expedited improving the front-line fire attack force and freeing more reliable vehicles for reserve status. Three factors are involved in the evaluation of the fleet:

1. Reliability
2. Liability
3. Serviceability

The average age of BFD’s reserve fleet is 30 plus years old, even though some of the reserve fleet has mileage that is less than 100,000 miles, which in some fire departments is one of the determining factors to the replacement fire apparatus. This speaks to the reliability factor: How reliable is an emergency vehicle that is over 30 years old?

NFPA 1901 addresses the design features of fire apparatus including fully enclosed cabs for all riding positions for apparatus designed after 1991. The BFD’s reserve fleet fails to meet this minimum requirement. Failing to meet the minimum NFPA 1901 standard could expose the City of Battle Creek to legal liabilities since the NFPA is an accepted industry standard.

Since the age of the reserve fleet is over 30 years old serviceability will be an issue and the ability to access replacement parts will become an issue if it has not already. Two of the three manufactures are no longer in business and therefore finding replacement parts is a challenge. Secondly, some of the front-line fleet is beginning to show signs of age due high mileage. One engine in particular, Engine 5, 1996 E-One Pumper, is approaching 100,000 miles.

This consultant found it difficult to determine Life-to-Date (LTD) of operating cost for BFD’s fire apparatus fleet due the fire departments inability to provide the data necessary to determine LTD. The records in most cases were inconsistent from year to year and the records only went back as far as 2003. There was only one fire apparatus purchased after 2003 and that apparatus was Engine Co.2, however this apparatus original purchase cost was unobtainable. Therefore this consultant estimated its original purchase cost.

This consultant found it difficult to determine maintenance per mile for the entire BFD’s fire apparatus fleet due the Fleet Departments inability to provide detailed fuel disbursements over the life of the vehicle. In many instances the records were inconsistent and very difficult to comprehend. Most fuel disbursements are conducted over several fuel sites throughout the city. Some are for fire station generators only.

The fact that the Battle Creek Aerial Tower is a not a quint and has no ability to carry or deliver water limits its usefulness. When it nears the end of its life cycle Battle Creek needs to replace it with a quint, even if staffing levels need to be renegotiated with IAFF local 335. In a new central fire station this ladder and an engine would work. Later on, a 100' quint could replace the engine and truck there.

Ultimately the department should have a fire protection fleet comprised of two 100' quints, three engines and one ARFF vehicle to serve the fire suppression needs of the City and Airport. Current use of the smaller quick response vehicles for EMS can continue as well



Battle Creek Fire Department Truck No. 1 without water tank, hose, or pump is currently stationed at headquarters.

While improvements are possible as new apparatus is introduced into the department, the existing equipment remains functional for the fire personnel, allowing them to fulfill their mission and address the job-related hazards found within the community. In the future the Battle Creek Fire Department could expand its role in specialty functions such as technical rescue and haz-mat mitigation. If so, apparatus specifications should allow for adequate compartment space and other design configurations that will facilitate this broader role.

The consultants also recommend the adoption of Class A Foam systems, for example, which nearly triple the firefighting capability of water carried on pumpers or quints. An alternative, *not recommended*, would be to add a 5000 gallon tanker truck stationed at the airport.

As apparatus is replaced some creative thinking may allow Battle Creek to stretch it's fleet purchasing budget. One example which may or may not be politically expedient would be to encourage Canadian manufacturers to bid on Battle Creek Apparatus. Currently the exchange rate between the Canadian and the US dollar can save as much as \$100,000 per unit. Canadian Apparatus makers like "Fort Garry" have a solid track record and offer warranties as good or better than US Manufacturers.



ABOVE: The Battle Creek Fire Department had to become familiar with a new type of apparatus, an ARFF (Aircraft Firefighting and Rescue) vehicle when it assumed fire protection duties for the W.K. Kellogg airport.

For more information on Quint apparatus See **Appendix 10** for an article by Robert Avsec. Here is a passage from that article:

Quint by definition

Before this discussion goes any further, let's make sure that we're talking about the same animal. Today's quint is designed to provide five tools for firefighters to carry out these tactical firefighting functions:

- Supply fire streams (pump and hoses);
- Provide initial and continuing water supply (pump, water tank, and hoses)
- Provide personnel with access to elevated areas (ground ladders)
- Provide personnel with access to elevated areas (aerial ladder)
- Provide elevated master fire stream (pump, hose, and aerial device)

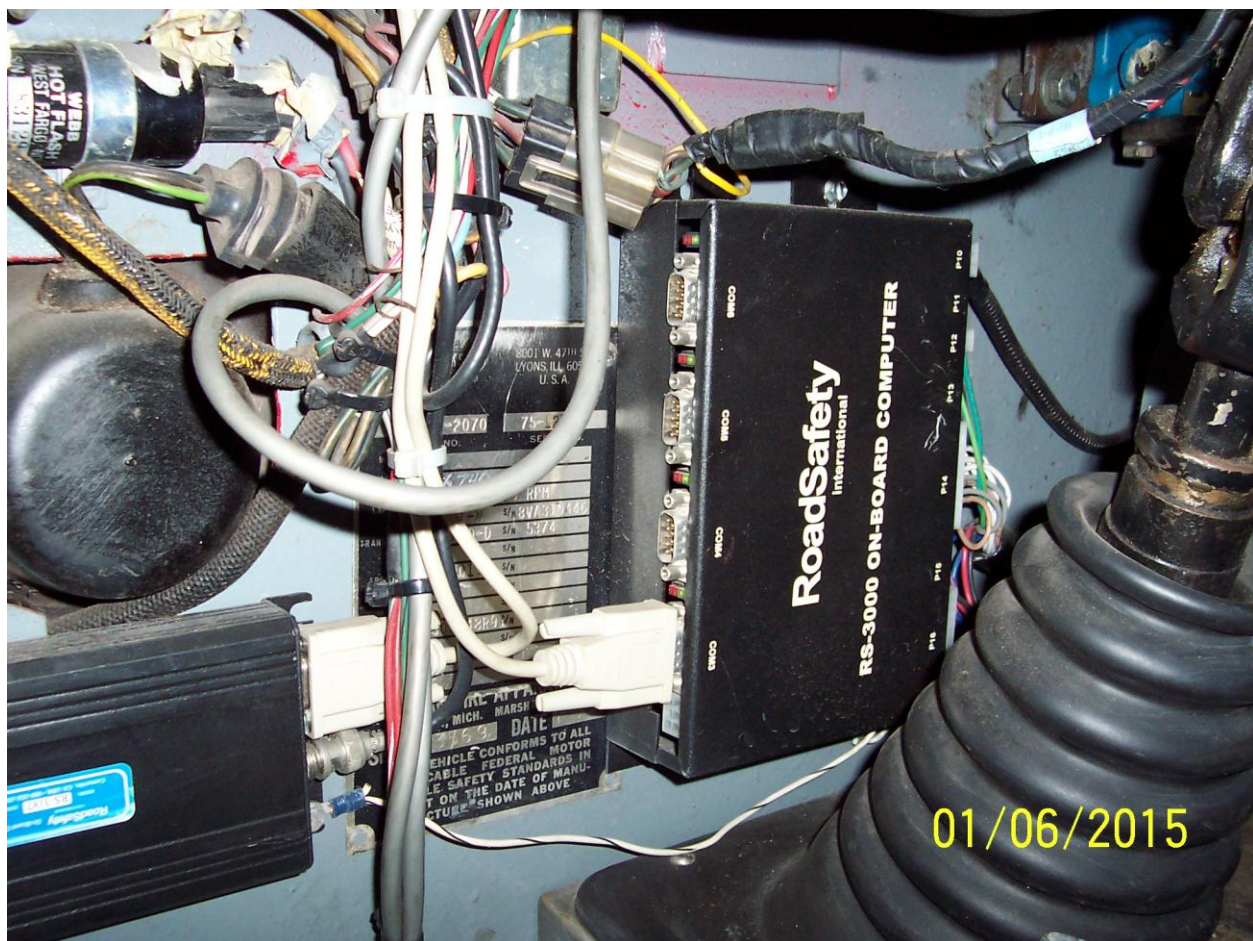
The National Fire Protection Association outlines the requirements for a piece of apparatus necessary to function as a quint in NFPA Standard 1901, The Standard for Automotive Fire Apparatus. Here is a summary of the quint requirements as detailed in Chapter 9 of the standard:

- Fire pump with a minimum capacity of 1,000 gallons per minute
- Water tank with a minimum capacity of 300 gallons
- Aerial ladder or elevating platform with a permanently installed waterway
- Hose storage area with a minimum of 30 cubic feet of storage area capable of accommodating 2.5 inch or larger fire hose; two hose storage areas, each with a minimum of 3.5 cubic feet or 1.5 inch or pre-connected hose lines.
- Compartments with minimum of 40 cubic feet for equipment storage
- Complement of ground ladders containing a minimum of 85 feet of ground ladders, including at least: two extension ladders, one roof ladder and one attic ladder
- Suction hose of a minimum of 15 feet of soft suction hose or 20 feet of hard suction hose for drafting water.

The BCFD frontline fleet is well maintained. The exterior paint on most vehicles appear to be in good condition barring small spots of electrolysis (corrosion) between dissimilar metals. The tires utilized on the frontline fleet also appear to be well kept which is important in the emergency services industry due to the extreme service requirements.

The BCFD should continue to utilize Safety® from ZOLL which protects the BCFD motorized fire fleet. Road Safety® from ZOLL is the leading proactive driver feedback and performance monitoring system. Road Safety provides monitoring information that improves safety, reduces costs associated with daily vehicle operations, and creates a culture of safety throughout an emergency response organization.

According to the fire department's command staff Safety® from ZOLL has reduced traffic accidents involving BCFD fire fleet.



All equipment will eventually need replacement, as per **Table F -1** , on the following page..

Table F-1 -- Battle Creek Fire Dept. -- Vehicle Replacement Schedule

Vehicle	Year	Description	Mileage	Projected Replacement Date	Projected Replacement Cost *
7302	1976	100' LTI Ladder Truck	52,220	2/01/2015**	\$850,000
7204	1982	Pierce Pumper	114,264	2/01/2015**	\$475,000
7206	1985	Quality Pumper	15,893	2/01/2015**	\$475,000
7202	1985	Quality Pumper	22,893	2/01/2015**	\$475,000
7209	1996	E-One Pumper	99,765	2/01/2017	\$503,500
7210	1996	E-One Pumper	61,248	2/01/2019	\$531,500
7212	1999	Pierce Rescue Pumper	49,028	2/01/2019	\$531,500
7213	1999	Pierce Rescue Pumper	34,631	3/01/2015	Being replaced with 2015 pumper
7303	1999	100' Aerial Platform	52,195	2/01/2024	\$1,079,500
7213	2006	75' Pierce Quint	15,983	2/01/2026	\$736,500
7100	2006	Heavy Rescue/Haz-Mat Company	9,002	02/01/2031	\$336,750

*The cost multiplier is 0.03% per year (X) times the original purchase cost of fire apparatus

**Units recommended in 2015 may have to wait. Four units can ultimately be replaced with two as fleet is reduced in station consolidations.

Tracking of the hours and mileage on all Battle Creek Fire Vehicles is important. The above dates and costs can vary and serve as guidelines. They provide a means of planning approximate replacement dates. Specific circumstances must be weighed prior to any significant investment in rolling stock. Photos of some Battle Creek Apparatus are found in **Appendix 11**.

Consultant Michael Washington has worked with Steve Siemen II to produce a comprehensive breakdown of maintenance costs per vehicle for the past ten years, These are on a multi-year tabular breakdown in excel format, a separate report already forwarded to Chief Schmaltz. **Table F-2** and **Figure 4** below summarize these maintenance costs and show they remain relatively stable year to year. They do rival closely what similar lease costs might be for several new vehicles.

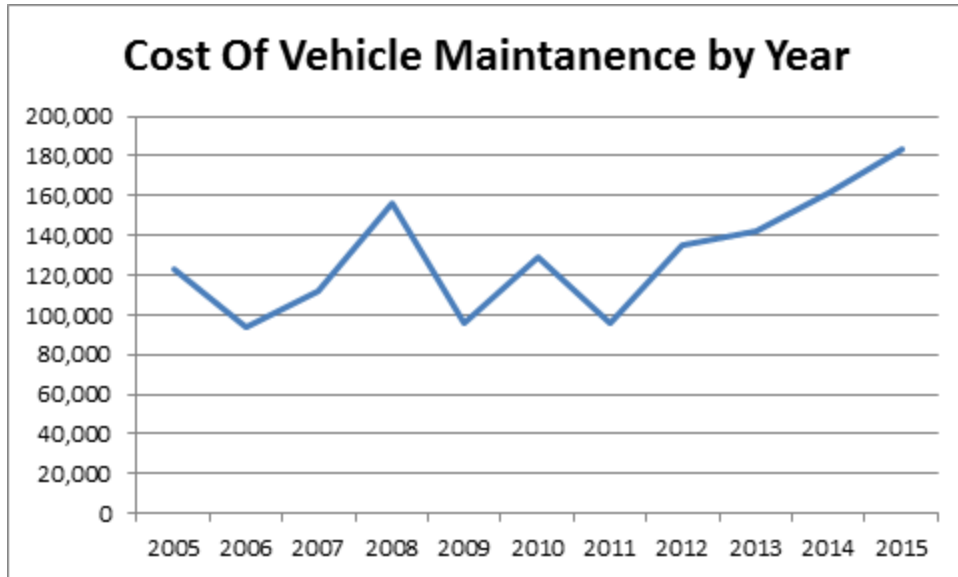


Table F-2 Fleet Maintenance Costs, Battle Creek Fire Dept.

OH = Overhead is each Vehicle's contribution to Fleet Services yearly overhead cost; OM = Operation and Maintenance, is the cost of parts, supplies and materials billed to vehicle for the year, minus Fuel

Year	OH	OM	OH + OM
2005	\$31,240	92,045	123,285
2006	23,707	70,298	94,005
2007	31,000	96,193	112,193
2008	40,867	115,155	156,022
2009	30,439	65,346	95,785
2010	29,710	99,028	128,738
2011	22,158	73,860	96,018
2012	85,193	50,214	135,409
2013	94,577	48,000	142,577
2014	65,000	95,921	160,921
2015	80,000	102,996	182,996

Figure 4



Enclosed mid-mount pumper with 360 degree viewing by pump operator *(Photo Courtesy Fort Garry Mfg.)*

Among other trends, the Maintenance cost analysis points to a "priority replacement list" which follows, as prepared by consultant Michael Washington:

Department: Battle Creek Division: Fleet

Request No.	Replacement / Addition	Estimated Cost	Description of Equipment Being Replaced (Trade)
1	Replacement	\$850.000	Equipment ID: <u>7302</u> Year: <u>1976</u> Miles/Hours <u>52220/4744</u> Make/Type: <u>American / LTI / Ladder Truck</u> Reason for Replacement: <u>End of Life Cycle due to age of unit</u> Repair Cost: YTD _____ LTD: <u>unknown</u> YTD _____ Fuel Usage: : _____ Gallons

2	Replacement	\$475.000	Equipment ID: <u>7204</u> Year: <u>1982</u> Miles/Hours <u>114264/586</u>
			Make/Type: <u>Pierce / Pumper</u>
			Reason for Replacement: <u>End of Life Cycle due to age of unit</u>
			Repair Cost: YTD _____ LTD: <u>unknown</u>
			Fuel Usage: : _____ Gallons

3	Replacement	\$475.000	Equipment ID: <u>7206</u> Year: <u>1985</u> Miles/Hours <u>15,893/453</u>
			Make/Type: <u>Quality / Pumper</u>
			Reason for Replacement: <u>End of Life Cycle due age of unit</u>
			Repair Cost: YTD _____ LTD: <u>unknown</u>
			Fuel Usage: : _____ Gallons

4	Replacement	\$475.000	Equipment ID: <u>7202</u> Year: <u>1985</u> Miles/Hours <u>22,839</u>
			Make/Type: <u>Quality / Pumper</u>
			Reason for Replacement: <u>End of Life Cycle due to age of unit</u>
			Repair Cost: YTD _____ LTD: <u>unknown</u>
			Fuel Usage: : _____ Gallons

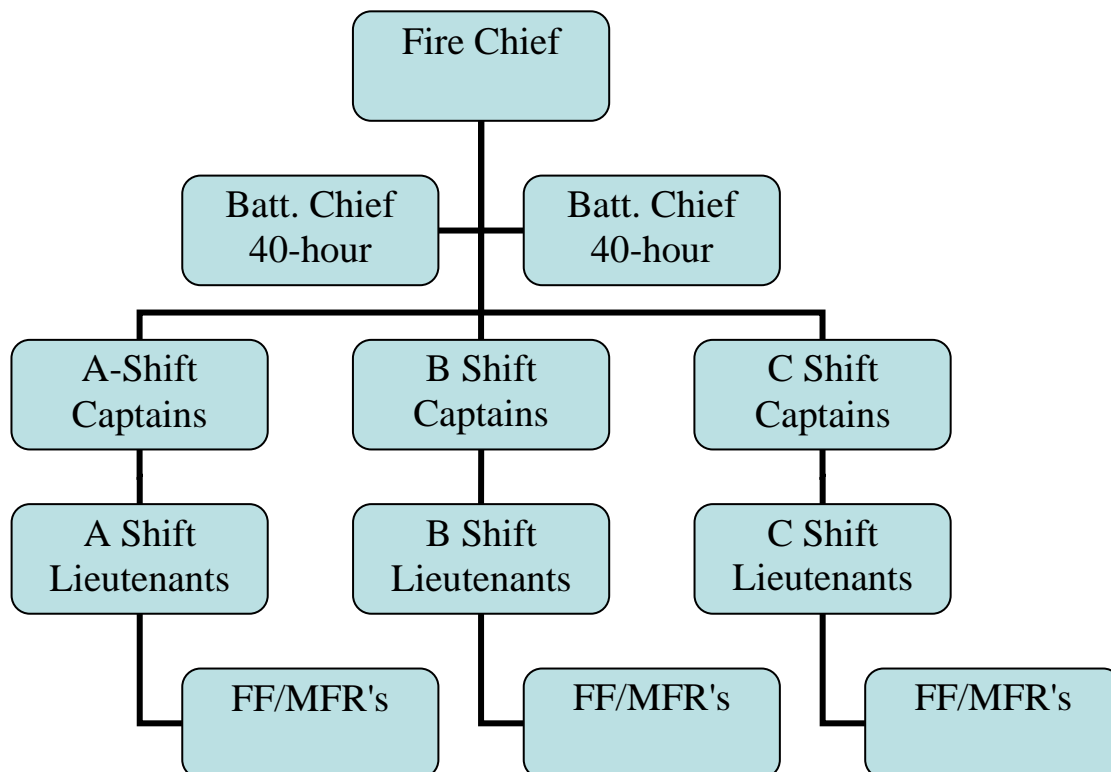
ORGANIZATIONAL LEADERSHIP

Battle Creek should be proud of many individuals within the organization who show dedication and provide a valuable resource to the community. Many members show a high level of dedication to their companies and to the department as a whole.

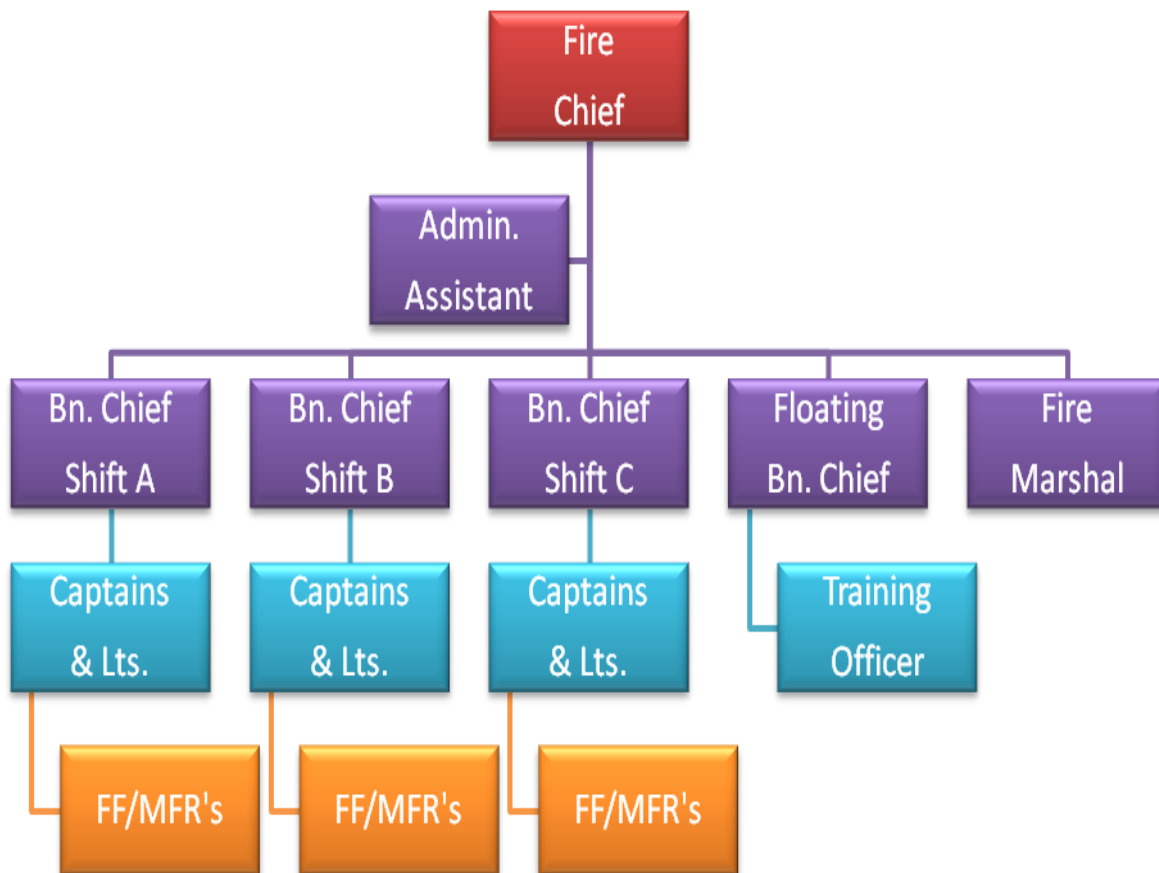
The consultant examined in detail the Fire Chief's decision to transition from two 40-hour Battalion Chiefs to three, one to manage each of the three Shifts, along with a fourth to cover vacancies and add supervision across the three shifts. We feel this will improve communication, provide continuity of command and ensure immediate availability of a Chief Officer 24 hours a day. It was highly recommended by the consultants and has been implemented. See article placed as the first entry in **Appendix 12**.

Figure 5-A below shows the previous rank structure and **Figure 5-B** on the next page shows the newly implemented reorganization.

**Figure 5-A -- Previous Organizational Structure
For Battle Creek**



**Figure 5-B -- Revised Organizational Structure
For Battle Creek**



Officer Development

A competency based selection process, as used in the selection of the current chief, is recommended for all officers, as long as the process remains in accord with the current labor agreement with Local 335. Selection in this fashion presents a proactive approach to the increased activity that the Battle Creek Fire Department will see and will feel many years into the future.

Strong leadership is a hallmark principle of an effective fire organization. The department may want to plan and prepare future leaders through various programs that are available often at little cost. Battle Creek is encouraged to develop quality promotional criteria.

Specific recommendations for the organization include targeted training at every level of the department, including operational, managerial, and leadership preparation. Prior to the transition to a new chief, candidates can be more prepared by assuring that lieutenant-level officers have been trained in operational courses like Managing Company Tactical Operations (MCTO) at the National Fire Academy or in an outreach program.

The State of Michigan has appropriate management-level training for Captains, similar to that offered in the acclaimed Maryland Fire Rescue Institute's Staff and Command School. The Assistant or Deputy Chief can continue to expand his or her skills in a leadership development course at the National Fire Academy and through courses at a community college such as Business Management or Fire Science. Ideally, the fire chief candidates of the future should be familiar with all of the materials covered in these courses. See the second entry in **Appendix 12** regarding website information for the National Fire Academy.

Attention to available developmental courses and training will help build the Department's foundation of knowledge, as well as create a healthy, competitive environment for the organization. Current officers must have an opportunity to compete in the fire chief process, for both an appreciation of their contributions in the past, as well as to ensure that local knowledge and support are shown to be important.

Below are some of the latest programs available for officer development:

1. IAFC Company officer leadership symposium

<http://www.iafc.org/micrositeFRIconf/Education/Content.cfm?ItemNumber=6593&navItemNumber=6465>

2. IAFC Company Officer Mentoring Program

<http://www.iafc.org/CompanyOfficers/CompanyOfficerMentoring.cfm>

3. National Fire Academy Managing Fire Officer Program

http://www.usfa.fema.gov/training/nfa/programs/mo_program.html

4. Center for Public Safety Fire Officer Designation

<http://publicsafetyexcellence.org/professional-credentialing/fire-officer.aspx>

BATTLE CREEK RESPONSE TIME DATA

The Battle Creek Fire Department can handle the myriad types of emergencies that the city routinely faces, but improvements are possible and some suggestions are presented throughout this report.

One statistic that is favorable is response time for a first arriving unit. The "fire" statistics include all units, including those coming from more remote stations when a multi-station response is needed. Hence they are higher. The first arriving unit for a fire would be similar to the times in the EMS category. See **Tables G-1** and **G-2** below.

Table G-1 Average Response Times			
Note: Times are from Dispatch until Arrival & Exclude 4/1/2014 through 8/30/2014 due to multiple RMS	EMS	FIRE	ALL
STATION 1	3:40	5:47	4:43
STATION 2	4:24	5:52	5:08
STATION 3	3:49	5:45	4:47
STATION 4	4:51	6:15	5:33
STATION 5	4:46	6:13	5:29
STATION 6	4:41	5:19	5:00

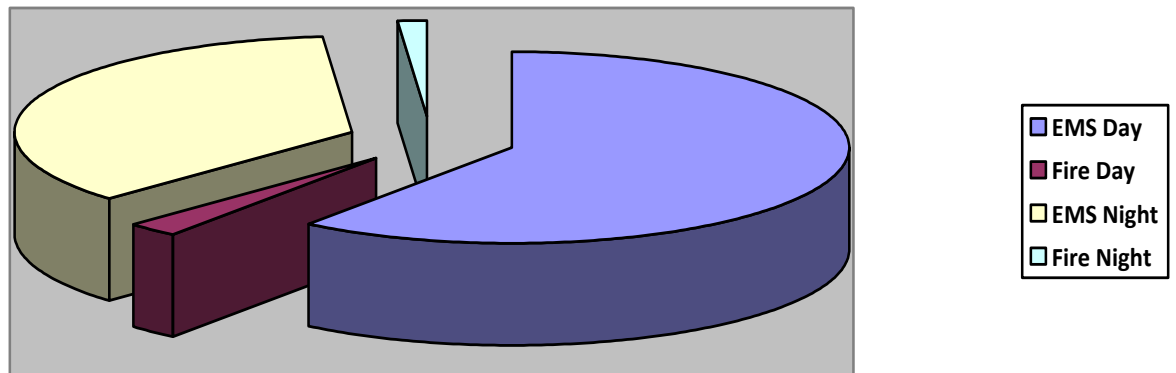
Table G-2 Average Turnout Times			
Note: Times are from Dispatch until Enroute & Exclude 4/1/2014 through 8/30/2014 due to multiple RMS	EMS	FIRE	ALL
STATION 1	1:27	1:34	1:30
STATION 2	1:35	1:47	1:41
STATION 3	1:30	1:40	1:35
STATION 4	1:34	1:43	1:38
STATION 5	1:41	1:52	1:46
STATION 6	1:39	1:38	1:38

FUTURE SCHEDULING

Once a fire station is in place, the personnel who staff it become a much greater investment than the building itself. One example of a creative venture that could be planned for is the concept of “Variable Staffing, based on Time of Day.” All across the City of Battle Creek responses escalate as an active populace awakes and goes about the busy workaday world, and decline as persons retire for the evening.

Responses in Battle Creek broken down by time of Day are shown in **Table H** on the following page, and are graphed in **Figure 6** below. These represent a breakdown of response data from April through August, 2014 and show that Battle Creek is like most other municipalities, with a variation in the number of responses based on the time of day. The Fire Department is much busier during the hours of the day when the people of Battle Creek are active.

Figure 6 - Battle Creek Responses by Day and Night



Full-time fire departments have traditionally kept the same number of people on the job 24 hours a day, around the clock. This has not only made the administrative act of scheduling easier, but has made the schedule attractive to firefighters who are willing to work longer hours in a week than the average worker.

The traditional *24-hours on and 48-hours off* has resulted in a schedule often seen as an attractive to prospective firefighters. On the other hand, a tremendous benefit has accrued to cities who permit this schedule since the firefighters will work 48 to 56 hours as opposed to 40 hours accumulated in a normal 8-hour per day work week.

Table H -- Response Frequency by Time of Day

		EMS	FIRE & Other	TOTAL RUNS		EMS	FIRE & Other	TOTAL RUNS
8 A.M.	0800 to 0900	124	3	127	Day: 8 A.M. Until 8 P.M.			
	0900 to 1000	117	8	125				
	1000 to 1100	127	4	131				
Noon	1100 to 1200	153	5	158				
	1200 to 1300	133	7	140				
	1300 to 1400	135	7	142				
	1400 to 1500	149	4	153		1641	66	1707
	1500 to 1600	129	9	138				
	1600 to 1700	172	3	175				
6 P.M.	1700 to 1800	153	6	159				
	1800 to 1900	128	2	130				
	1900 to 2000	121	8	129				
	2000 to 2100	130	7	137				
	2100 to 2200	122	2	124	Night: 8 P.M. until 8 A.M.			
	2200 to 2300	101	2	103				
Midnight	2300 to 2400	85	4	89				
	2400 to 0100	71	7	78				
	0100 to 0200	71	3	74				
	0200 to 0300	68	3	71		980	36	1016
	0300 to 0400	44	4	48				
	0400 to 0500	49	2	51				
Daybreak	0500 to 0600	79	1	80				
	0600 to 0700	77	0	77				
	0700 to 0800	83	1	84				
		2621	102	2723		2621	102	2723

A schedule could be arranged through bargaining with Local 335 that permits more hours worked during the higher demand periods and fewer in the evening in a cost-neutral fashion (E.g. Two nights off in lieu of one 24-hour Kelly Day off). There is no immediate need to investigate this option but during some future labor negotiations it would be well worth exploring.

COMMUNICATIONS AND DISPATCH

The consultants visited the Calhoun County Dispatch Center in Marshall and overall felt it was functioning well and serving the needs of Battle Creek Fire And Police adequately. (See the insert two pages hence).

Battle Creek is fortunate to participate in a County-wide Communications Center for the dispatching of its fire department. This affords an economy of scale to all county participants and allows improved coordination of mutual aid units, and coordination of Fire, EMS and Police for routine incidents. The first thing identified with the communications center was the healthy availability for redundancy in the system. In the unlikely event that the dispatch center was closed for any reason, alternate 911 Public Safety Answering Point (PSAP) locations are present as a backup dispatch system. We will see later in our report that dispatching is a key grading factor for the ISO (Insurance Services Office).

The Computer Aided Dispatch software package used in the communications center seems to meet the community's needs, while still having capabilities that have yet to been utilized to their full advantage. One addition that should be made a priority is the downloading of CAD information from the County to call tracking software used by Battle Creek and some other Calhoun County fire departments (Firehouse software or its equivalent). This would go a long way to increasing the accuracy of call statistics and ensuring a consistent method of entering information into this program.

Battle Creek will be working with the Communications center and neighboring jurisdictions to implement a MABAS "Mutual Aid Box Alarm System" permitting automatic backup with neighboring fire departments. In some jurisdictions this concept is called AMAR (Automatic Mutual Aid Response) and is used to summon closest units regardless of jurisdictions. The MABAS system may find Battle Creek with more fire action as it is added to neighboring first alarm zones.

When anyone in the city dials 911 for fire or medical assistance, the clock begins for the fire department. Many elements result in the final response time of the fire department to the call for help. These begin in the dispatch center. Time can be saved with efficient dispatch just as with efficient vehicle response. See **Figure 7** illustrates these elements:

Figure 7 -- Response Time Equation

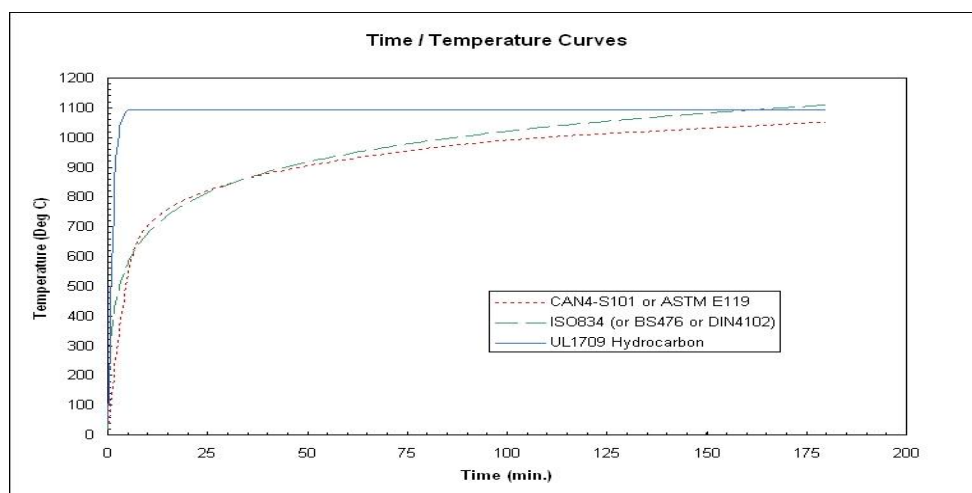
Call Processing Time	+	Alerting Time	+	Turnout Time	+	Travel Time	+	Setup Time	=	OVERALL RESPONSE TIME
-------------------------------------	----------	--------------------------	----------	-------------------------	----------	------------------------	----------	-----------------------	----------	--------------------------------------

- **Fire Department Call Processing Time¹:** The time interval that starts when the call is created in CAD by a Fire Dispatcher until the initial Fire or EMS² unit is dispatched.
- **Alerting Time:** Here it is separated out since separate persons in Calhoun County Dispatch alert and sent units from those who take calls .
- **Turnout Time:** The time interval between the activation of station alerting devices to when first responders put on their PPE³ and are aboard apparatus and en-route (wheels rolling).
- **Travel Time:** The time interval that begins when the first unit is en route to the incident and ends upon arrival of any of the units first on scene.
- **Setup Time:** The time needed at the scene (E.g. stretching hose lines) before mitigation actually begins

The first two factors in the equation can be improved in the dispatch center, while the final three are up to the fire department. The consultants believe that the Calhoun County Dispatch Authority have been diligent in knowing the importance of minimizing call taking and dispatch times. **Appendix 13** contains an excellent article on reducing all response time phases.

Ideally call processing time and alerting time combined are about a minute or less, within the recommendations of NFPA standards. As seen in **Figure 8** below, the temperature of a fire escalates quickly during the first minutes. If lives can be saved, rescues must be performed prior to an event known as flashover, which normally occurs at 500 degrees Celsius for normal residential combustibles.

Figure 8 -- Time/Temperature Curve



NFPA standards do recommend four personnel on responding apparatus so that fire fighting and life saving actions can be taken immediately upon arrival.

Calhoun County Consolidated Dispatch Authority

Serving Our Community One Call at a Time

Mission Statement

Our mission is to provide the residents and visitors of Calhoun County with a timely and accurate communication link to emergency response services. We are committed to answering all 9-1-1 and non-emergency calls with professionalism, integrity and compassion, and efficiently dispatching public safety personnel/agencies within Calhoun County. With a commitment to continued education and excellence, we are determined to make a difference by helping to save lives and protect property 24 hours a day; 7 days a week.

About CCCDA



The Calhoun County Consolidated Dispatch Authority (CCCDA) is a public authority formed under the Urban Cooperation Act of 1967 to serve the residents, visitors, business owners, and public safety agencies of Calhoun County.

The CCCDA is the sole public safety answering point in Calhoun County, providing direct dispatching services to the Michigan State Police, the Calhoun County Sheriff, Battle Creek Police/Fire, Albion Public Safety, Marshall Police/Fire,

Springfield Public Safety, Emmett Township Public Safety, and a number of rural fire departments and ambulance providers.

The CCCDA is governed by a Board of Directors, whose membership is comprised of officials appointed from the various municipalities and organizations that the CCCDA services. The nine-member board has the authority to hire an executive director to manage the daily operations of the dispatch center. In addition to the CCCDA Governing Board, a Technical Advisory Committee comprised of local law enforcement representatives has been formed to provide technical assistance to the CCCDA.

Prior to the creation of the CCCDA, three separate dispatch centers located in Albion, Battle Creek, and Marshall provided this service to the community. In 2007, the entities that manage and fund the three centers began working on a plan that would reduce costs and improve efficiencies. The result of this plan was the formation of the Calhoun County Consolidated Dispatch Authority. The consolidated center officially opened in March 2010 after nearly three years of careful planning.

The CCCDA is partially funded through a monthly telephone surcharge of \$0.60 per device. Additionally, all participating municipalities provide additional operating revenue to the CCCDA thru the Call for Service Formula.



Dedicated Employees At the Calhoun County Dispatch Center



Left: Emergency 9-1-1 Dispatch is consolidated for all of Calhoun County in the County Administration building.

The center handles Fire, EMS and Law enforcement for many agencies

EVOLVING FIRE DEPT. MISSION

When assessing needs, we must look at what services are essential for fire departments to provide to their customers. The fire service should not only provide an emergency response role to its community, but also provide support functions that make the fire departments a valuable asset to their community's safety. Other programs in which the consultants feel are valuable are the training of kids with a fire safety house and the juvenile fire setters program.

The Battle Creek Fire Department has assumed fire protection duties at the W.K. Kellogg Airport, extending and complicating their overall mission. See **Appendix 14** for an article on this new venture. Battle Creek is rare in that it does not provide the EMS Transport Service for the community. LifeCare handle this function very well. While this arrangement might seem attractive to a few fire purists, it makes the department less active.. A number of Battle Creek Fire department personnel would welcome the opportunity to obtain Paramedic certifications and add hospital transports to the list of services they provide.

We agree that Expansion of EMS service to include paramedic care and transport would add value to the Fire Department and would result in a net gain in revenue. (See the Local 335 report in **Appendix 5**.) We also note that the City's gain would be LifeCare's loss, and there would be a significant decrease in the activity and revenue of LifeCare, the long-established EMS Service in the region. For the citizens it would be essentially a wash so this will remain a political issue and change is not likely any time soon.

Fire Department personnel in Battle Creek would welcome a broader mission and have the talent in the organization to accept a broader role in emergency response. For the present, resources and time are both limited so the fire department is restricted fairly well to providing only first response to Medical emergencies..



Left: Firefighters perform extrication while LifeCare is prepared to administer Advanced Life Support, provide transportation to the hospital, and collect transport reimbursement fees.

In Michigan the concept of "Public Safety Officer" which combines police and fire into a single organization is popular.

Nearby Kalamazoo successfully operates the largest PSO organization in the country. This is not advocated by the consultants for Battle Creek, and can fail. See **Appendix 15** which shows how Michigan's Raisin Township abolished its Public Safety Department and separated safety services into separate fire and police agencies.

CEREAL PLANTS AND OTHER INDUSTRY

Battle Creek is known as "The Cereal City" as its corporate residents Kellogg's, Post and Ralston-Purina provide a significant economic benefit in terms of jobs and regional revenue. Other large employers are shown in the insert below, borrowed from the demographics section in **Appendix 2**.



Corporate citizens provide an added dimension of responsibility and a new source of service demands. The Battle Creek Fire Department needs to maintain a professional relationship with these and other corporate organizations each organization since they are dependent on one another.

According to the City's 2011 Comprehensive Annual Financial Report, ^[42] the largest employers in the city are:		
No.	Employer	No. of Employees
1	Kellogg	2,500
2	Denso	2,085
3	Hart-Dole-Inouye Federal Center	1,556
4	Bronson Battle Creek	1,400
5	Battle Creek VA Medical Center	1,300
6	Michigan Air National Guard	1,127*
7	Battle Creek Public Schools	1,089
8	Kellogg Community College	920
9	I I Stanley	750
10	Family Fare	700
10	Duncan Aviation	700
*The Air National Guard is no longer in Battle Creek		

The Battle Creek Fire Department has worked with plant safety officers and other officials at these facilities to assist with internal fire safety concerns maintain a positive relationship. The fire department must continue to ensure that it can meet the needs of its entire district and the special needs of its largest customers

The Battle Creek Fire Department needs to remain aware of all issues concerning fire and life safety matters since its firefighters will be put in danger during responses. They need to be aware of the capabilities and operation of the fire protection systems in place. Most buildings are sprinkler protected. Knowledge gained ahead of time, coupled with preplans make the department "pro-actionary" rather than reactionary.

FIRE PREVENTION

The fire prevention efforts within the Battle Creek Fire Department currently fall in the hands of one individual, Lt. Quincy Jones, and he stays quite busy investigating fires, and conducting fire inspections as necessary. He is the city's "Fire Marshal"

The consultants feel that this is a strain on one individual for the City the size of Battle Creek and recommend that the prevention office be augmented by having the fire companies participate in the prevention and inspection duties.. "Fire Company Inspections" would not only improve the fire prevention efforts but allow familiarity with the various commercial occupancies throughout the city,

Table J on the following page below shows the number of full-time fire prevention personnel in comparable cities: The average is 2.3 compared to 1 (one) in Battle Creek.



Lt. Quincy Jones, Fire Marshal for BCFD, Investigating one of many structure fires that have struck Battle Creek

Closely related to Fire Prevention is Public Education. We noted in the Executive Summary that "Fire Safety instruction gives a public face to the Battle Creek Fire Department and is especially important in terms of educating school children in fire survival, and training adults to have working photoelectric smoke alarms and evacuation plans for their families."

Table J -- Comparisons to Battle Creek -- Full-time fire prevention/inspection/investigators

	Population	Sq. miles	No. of Fire stations	No. of uniformed personnel	No. of full-time Personnel assigned to inspection/investigation
MICHIGAN					
Dearborn Heights city	57,774	12.07	2	53	2
Royal Oak city	57,236	11.83	3	71	2
Novi city	55,224	32	4		1
Saginaw city	51,508	17.34	4	51	1
Kentwood city	48,707	20.95	3	55	2
OHIO					
Kettering city	56,163	18.4	5	54ft/50vol	1.5
Elyria city	54,533	20.57	4	75	3
Lakewood city	52,131	6.69	3	87	3
Cuyahoga Falls city	49,652	25.5	5	90	2
INDIANA					
Noblesville city	51,969	58	7	126	2
Elkhart city	50,949	35.69	7	124	3
ILLINOIS					
Orland Park village	56,767	33	6	114	3.5
Tinley Park village	56,703	16.04	4	132	3
Oak Lawn village	56,690	8.59	3	72	2
Berwyn city	56,657	3.9	3	80	1.5
Mount Prospect village	54,167	10.37	3	74ft/13pt	5
Wheaton city	52,894	11.44	3	53	*
Normal town	52,497	18.41	3	60	2
Hoffman Estates village	51,895	20.98	4	95	*

Regional Average	57,774	21.09	4.14	81.4	2.3
Battle Creek	52,347	44	6	80	1

* Not reported

There are two cites from **Table J** which list a single person assigned to inspection and investigation, Novi and Saginaw. Both have fire company personnel credentialed as NFPA-certified inspectors and have vigorous company inspection programs.

The inset below shows how one Michigan Township recently augmented its fire prevention force to a total of four persons.

C&G NEWSPAPERS

SHELBY TOWNSHIP, MICHIGAN

Published March 4, 2015

‘We fight fires now with codes’

Fire marshal and new deputy fire marshal position to be filled following retirement

By Sarah Wojcik swojcik@candgnews.com

SHELBY TOWNSHIP — Fire prevention is something most people probably don’t think about when they imagine the Shelby Township Fire Department. But the inspection division goes a long way in ensuring fire safety and fighting fires before they happen.

With longtime fire marshal Eddie Vojtush’s retirement Feb. 26, fire inspectors Steve Henion and Duane Staten will rise to the ranks of fire marshal and deputy fire marshal, respectively. Deputy fire marshal is a new position.

[See **Appendix 16** for complete story]

With new construction and ongoing renovations planned at the Cereal Plants and other locations throughout the city, it is important that the prevention bureau work well with the Inspection Department to take a proactive role in approving plans and conducting construction inspections to ensure fire codes compliance as the buildings are constructed or renovated. It is good that there is a cordial working relationship between Chief Schmaltz and the Battle Creek Fire Department and the Battle Creek Inspection Office led by Dennis McKinley **See the website summary below.**

BATTLE CREEK INSPECTIONS

Contact Information

Need to get in touch with us? Click on the department head name and send us an email.

Name: [Dennis McKinley, Code Compliance administrator](#)

Phone: (269) 966-3387

Inspections

The City of Battle Creek Inspection Division is an enforcing agency for the State of Michigan Construction Code.

The state building code says:

The provisions of the Building Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

The purpose of these codes is to provide minimum standards for buildings constructed in a way that provides for structural integrity, **fire safety** and, most importantly, safe means of egress.

It is our goal to provide the services outlined in the codes in a professional and prompt manner. Our staff of highly trained individuals have met or exceeded all registration requirements mandated by the State of Michigan for their respective trades.

Please go the [Clerk's Office page to view the Fee Schedule](#).

WATER DEPARTMENT

Another key relationship that needs to remain positive is that with the water department. By working with the city water department the fire department can be ensured that the water distribution system will serve the needs of Battle Creek now and into the future. The passages on the next page indicate that there are 300 miles of water mains delivering vital firefighting flows. (See also the hydrant flushing announcement published as a public service.)

In the analysis of the water system in Battle Creek it was found that there are adequate water mains with sufficient volume and pressure in the populated portions of the city and that maintenance of the hydrants is timely and reliable.

Battle Creek Fire Department can provide adequate water, at least initially, from tanks on the pumpers that respond so that sufficient water is available immediately to control a room and contents fire.

The department can tap into hydrants with sufficient volume for the larger or sustained operations.

.As new hydrants are installed we recommend that they have “Stortz” fittings on the primary or steamer. This requires little marginal cost.



Left: Battle Creek Water is plentiful in most parts of the city

Consultants recommend Class A Foam on all pumpers and quints to triple the extinguishing capacity of water delivered to the scene

FROM THE WATER DEPARTMENT WEBSITE:

Water Production & Distribution

Perry Hart

Superintendent

269-966-3481

The Water Superintendent reports to the Utilities Director and is responsible for the operation and maintenance of the City's water production and treatment facility at the Verona Well Field, as well as the City's water storage and pumping facilities and 300 miles of water main located throughout the community. This position is responsible for ensuring that the community's drinking water is safe and meets all Federal and State drinking water standards.

BATTLE CREEK, MI: The City of Battle Creek Water Division will be doing their annual flushing program starting May 26, 2014 and finishing approximately the week of July 4. Water Division crews will be flushing fire hydrants from Sunday through Thursday from 10 p.m. to 6 a.m. This schedule is used to minimize the inconvenience to our customers and to allow the water to stabilize in the water mains before the normal daily demands occur.

Flushing fire hydrants and water mains provide several benefits to the water users of our system. Regular flushing allows for the highest quality of water to be delivered to our customers. Flushing also allows the staff of the Water Division to verify operation of the distribution system and identify areas that require repair and/or maintenance. This also ensures that the fire hydrants are ready should the Fire Department need them.

The process of flushing the water system often results in cloudy or discolored water. We do what we can to limit this. **The safety of the water we supply is not diminished by this process.** Please review the schedule and map of our planned flushing program to see when your area may be affected. The Water Division will keep these schedules updated regularly in the news media and on the City of Battle Creek website. [Click here](#) for the hydrant flushing schedule.

While the flushing crew is working in your area, please be observant of the water quality while doing laundry or other tasks that require rust-free water. Discolored or rusty water may be present in the area being flushed as well as adjacent areas. If you should encounter discolored water, we recommend that you run water at cold water taps within your home or business.

If ever there is a need for an extensive water supply, or a need to evacuate a large amount of water new technology exists and has been made available through federal grants. Large 12" hose, large pumps and large cannon like nozzles, each on a separate truck chassis are available on the east and west coasts, but not yet in the Central United States.

. Battle Creek does not need this equipment now but could certainly house it in a new fire station some day if it were a gift of the Federal Government.



In this photo Andrew Lloyd, volunteer firefighter in New Jersey, is seen with a unique specialty piece of equipment carrying 4000 feet of 12" oversize diameter hose, kept at the Schooley's Mountain Fire Company in Morris County, NJ. This is one of three pieces. The others, a pump unit and a nozzle turret gun unit, are housed elsewhere in the county. This powerful three piece unit was a part of a regional WMD grant and was used during Hurricane Sandy when two million gallons of water were successfully pumped out from the duct areas of the Holland Tunnel.

PRE-INCIDENT PLANNING

As new development occurs in Battle Creek it will be vital that firefighters know as much information as they possibly can about the buildings to which they respond and the consultants were pleased that some work is already being done in this regard. Obtaining this information occurs prior to any response through preplanning inspections known as pre-incident surveys. These surveys show firefighters the building layout, water supply locations, accessibility issues, fire suppression design coverage and limitations, alarm panel locations, and specific life safety hazards, plus any other items the fire departments need to know ahead of time.

Typical information that is minimally covered in preplans is referenced in the *NFPA 1620 Standard: Recommended Practice for Pre-Incident Planning*. Francis L. Branigan, in his book *Building Construction for the Fire Service*, states "pre-fire planning is the key element for the fire service, and without it, firefighters are just reactionary."

Information in the formulation/design of preplans is available from the Fire Protection Handbook's current edition. This manual has an entire chapter on the development of preplans. It should also be noted though that Microsoft's Visio Program has a preplan package available that is much more firefighter friendly than the standard symbols used in both the NFPA 1620 and Fire Protection Handbook.

MUTUAL AND AUTOMATIC AID

Several Chiefs of mutual-aid departments met with the Consultant, expressed respect for the Battle Creek Fire Department, and applauded the leadership role taken on by Chief Schmaltz as they seek to implement MABAS. (Mutual Aid Box Alarm System)

There are no reasons why any department in Calhoun County need hesitate before sending or asking for assistance as needed. Even though Battle Creek is the largest department by far, in terms of equipment, staffing and expertise, it is still to their advantage to participate. In what is sometimes called the "Robin Hood Syndrome" the haves subsidize the have-nots. There comes a time, however, when some vital piece of equipment is needed in return, perhaps when Battle Creek is stretched thin due to multiple or prolonged incidents.

A recent example was the multiple-vehicle pile-up that occurred January 9th. during a blinding snow storm on Interstate 94 (See insert below).. Battle Creek was on the sending end of mutual aid but could just as easily been the recipient if the incident occurred a few miles farther to the East. **Appendix 17** contains an article on the pileup showing that Battle Creek Fire was one of 25 agencies used at the scene.

Even if not reciprocal, there are benefits to Battle Creek citizens by sharing resources many of whom might need emergency services outside of the City limits..



WOODTV.COM

193-vehicle pileup shuts down I-94 for 2 days

By 24 Hour News 8 web staff Published: January 9, 2015, Updated: January 11, 2015, 9:12 pm

BATTLE CREEK, Mich. (WOOD) — Massive pileups involving nearly 200 vehicles closed a portion of I-94 west of Battle Creek for about 43 hours.

Around 9:20 a.m. Friday, whiteout conditions on the highway between exits 88 and 92 (Galesburg and Climax) contributed to wrecks in both the east and westbound lanes involving an estimated 193 vehicles. **One person was killed and 22 more hospitalized.**

The person killed has been identified by MSP as Jean Larocque, a 57-year-old truck driver from Saint-Chrysostome, Quebec in Canada according to Michigan State Police.

Westbound lanes reopened Saturday night, but eastbound lanes remained closed as semis were cleared and the Michigan Department of Transportation checked the road. In a news release around 4:30 a.m. Sunday, MSP said MDOT had inspected both the westbound and eastbound lanes of I-94 and determined they was safe for vehicle traffic.

.In the eastbound lanes, 26 semis and 34 cars were involved in the pileup. In the westbound lanes, 50 semis and 83 cars wrecked. That's **a total of 76 semis and 117 passenger vehicles.**

MUTUAL AID EXAMPLES

- Surrounding Battle Creek are mutual aid fire companies which vary greatly in terms of their organizational structure. In nearby Emmett Township, as in Springfield, Fire and Police duties are combined into a single "Public Safety"



ABOVE: EMMETT TOWNSHIP PUBLIC SAFETY DEPARTMENT



LEFT;

**IMAGES FROM
SPRINGFIELD
PUBLIC SAFETY
WEBSITE**

**(BATTLE CREEK
COULD PROVIDE
EXCELLENT FIRE
PROTECTION TO
THIS CITY ON A
CONTRACT BASIS.)**



FIRE DISTRICT INCLUDING BATTLE CREEK

Once the MABAS system implemented by Chief Schmaltz and his counterparts in Calhoun County, adjacent fire departments will begin to respond automatically into one another's' jurisdictions. If this works well, a next step that could be considered in the future would be the creation of a "joint fire district" independent of the political subdivisions. A new governmental entity is formed, the "fire district" whereby city and township borders are dissolved for fire protection purposes and the larger fire district becomes its own entity protecting all political subdivisions or parts thereof which have entered the partnership. In Calhoun County the City of Battle Creek would be the dominant player in any such arrangement. Serious concerns arise for the city with any such arrangement, It is not to be entered into lightly, and probably not any time soon..

City and village commissioners and township trustees can use a joint resolution approved by a majority of the members of each of the legislative boards to create a joint fire district. Such a district usually is comprised of a municipal government such as Battle Creek and/or Springfield and all or any portions of the townships such as Emmett or Bedford.

A joint fire district so created is usually given a name different from the name of any participating township or municipality but can include names of the participants. The governing body of the joint fire district becomes a board of fire district trustees, which includes one representative from each board of township trustees and one representative from the legislative authority of each municipal corporation in the district. Financial, Planning and Legal professionals from the community can round out board membership, thus making it a viable policy setting body.

Two primary reasons often cited for the creation for a fire district are:

- Enhance service delivery (*Usually Does*)
- Reduce costs (*Usually Doesn't*)

When Chief David Schmaltz investigated the formation of a Fire District that would include the City of Defiance Ohio and several surrounding townships, he identified the following positive characteristics:

- Enhanced service delivery
- Revenue and expenses are distributed over a larger area
- Increased flexibility in staffing
- Broader Fire and EMS coverage
- Better response times
- Elimination of redundant or duplicated resources like apparatus, record keeping, and equipment
- Standardized training along with policies and procedures
- Improved Fire Code enforcement and public education
- Insurance savings through ISO
- Increased opportunities for participation (rope, water, HazMat.)

While the benefits are real for the entire new District, it usually means the "Haves" are subsidizing the "Have-nots." In Calhoun County, Battle Creek would be subsidizing its less wealthy neighboring townships. While protection is improved overall, it might be less in the city.

For example, let's use the ISO (Insurance Services Office) rating in the following HYPOTHETICAL example:

(Lower ratings are better on a 1-to-10 scale)

Four adjacent communities form a district; Here are the before and after ISO ratings::

Prior to a district:		After District:	
City	4	City	5
Township A	8	Township A :	5
Township B :	6	Township B :	5
<u>Township C :</u>	<u>6</u>	<u>Township C :</u>	<u>5</u>
AVERAGE	6	AVERAGE	5

In the above hypothetical example, the overall fire protection is improved with the creation of a district while it suffers a one point degradation in the city. This isn't necessarily a deal breaker, however. City of Defiance City Manager Jeff Leonard, when evaluating the formation of a Fire District with Defiance Township , Richland Township and Noble Township stated:

"We have a sense of Community here. I don't necessarily mind subsidizing our neighbors. I would hope that if Defiance residents are seriously injured in an accident outside the City limits, they would still get quality care."

Some drawbacks to a Fire District identified by Chief Schmaltz are:

- Not much savings up front, costs might actually increase
- Who is going to be in charge?
- Loss of identity by individual departments
- Possible loss of volunteer membership in those communities still using volunteers
- Ability to recruit enough part-time / auxiliary personnel
- Overcoming cultural differences

Districts work well in many areas, as can be seen from the example cited from Antrim County Michigan on the next page. This District covers about 70 square miles.

For this example we reproduce a web page from the Bellaire Fire District which serves the Village of Bellaire, two townships, and the School district within a third township.

This District cites the Michigan Fire Prevention Public Act 2.07 of 1941, as its authority for existence, and the consultants provide additional legal references on subsequent pages.

ANTRIM COUNTY, MICHIGAN

Bellaire District Fire Department

Joseph Baker, Fire Chief

735 Broad Street, PO Box 483, Bellaire Michigan 49615

Phone: 231-533-8708

Fax: 231-533-5259

E-Mail: bellairefire@gmail.com

Service Area: the Bellaire District Fire Department has a primary service area of approximately 70 square miles. The service area includes Kearney Township, Forest Home Township, the Village of Bellaire and the Bellaire School District of Custer Township.

The Mission of the Bellaire District Fire Department is to protect and serve the community through fire prevention, suppression, education, rescue operations and investigation according to the authority granted by the Michigan Fire Prevention Public Act 2.07 of 1941, using resources of today, yesterday and the future.

The Goals of the Bellaire District Fire Department are to reduce fire losses, to increase rescue knowledge and performance, to increase fire prevention and fire education, and to service the community as needed.

FIRE PREVENTION CODE

Act 207 of 1941

AN ACT to provide for the prevention of fires and the protection of persons and property from exposure to the dangers of fire or explosion; to authorize the investigation of fires and the discovery of crime or other offenses in relation thereto; to require the razing, repair, or alteration of buildings, and the clearing and improvement of premises which constitute a fire hazard or a menace to the peace, security, or safety of persons or property; to control the construction, use, and occupancy of buildings and premises in relation to safety, including fire safety; to provide for the certification of fire inspectors and the delegation of certain powers to those certified fire inspectors; to provide for the regulation of the storage and transportation of hazardous material; to provide for the issuance of certificates; to prohibit the use of certain fire extinguishers and fire extinguishing agents; to provide immunity from liability for certain persons; to provide for the administration and enforcement of this act; to prescribe penalties; to provide for the promulgation of rules; to provide for the assessment of fees; and to repeal acts and parts of acts.

Note the following Statutes from the State of Michigan which provide authority and guidance in the formation of a Joint Fire District.

EMERGENCY SERVICES TO MUNICIPALITIES

Act 57 of 1988

AN ACT to provide for the incorporation by 2 or more municipalities of certain authorities for the purpose of providing emergency services to municipalities; to provide for the powers and duties of authorities and of certain state and local agencies and officers; to provide for certain condemnation proceedings; to provide for fees; to provide for the levy of property taxes for certain purposes; and to prescribe penalties and provide remedies.

History: 1988, Act 57, Eff. Apr. 1, 1988 ;-- Am. 1998, Act 167, Eff. Mar. 23, 1999 ;-- Am. 2006, Act 652, Imd. Eff. Jan. 5, 2007 ;-- Am. 2011, Act 261, Imd. Eff. Dec 14, 2011

© 2009 Legislative Council, State of Michigan

The People of the State of Michigan enact:

Document	Type	Description
Section 124.601	Section	Definitions.
Section 124.602	Section	Incorporation of 2 or more municipalities as authority for purpose of providing emergency services; transfer of municipal emergency service; creation of authority by adoption of articles of incorporation; endorsement; form; jurisdiction of authority; publication of articles of incorporation; filing certified copy; effective date of authority; validity of incorporation; applicable laws.
Section 124.603	Section	County, city, village, or township as part of existing authority; amendment to articles of incorporation.
Section 124.604	Section	Election.
Section 124.604a	Section	Violation of MCL 168.1 to 168.992 applicable to petitions; penalties.
Section 124.605	Section	Contents of articles of incorporation.

Section 124.607	Section	Acquisition of private property by authority.
Section 124.606	Section	Authority as body corporate; powers generally.
Section 124.610	Section	Emergency services; articles of incorporation; collective bargaining; labor agreements; representation.
Section 124.611	Section	Withdrawal of incorporating municipality from authority.
Section 124.612	Section	Tax levy by authority.
Section 124.613	Section	Tax levy by municipality.
Section 124.614	Section	Effective date.

EMERGENCY SERVICES TO MUNICIPALITIES (EXCERPT)
Act 57 of 1988

124.603 County, city, village, or township as part of existing authority; amendment to articles of incorporation.

Sec. 3.

(1) Any county, city, village, or township may become a part of an existing authority by amendment to the authority's articles of incorporation, adopted by the legislative body of the county, city, village, or township and by the legislative body of every other county, city, village, or township of which the existing authority is composed.

(2) Other amendments may be made to an authority's articles of incorporation if adopted by the legislative body of each city, village, or township of which the authority is composed. An amendment shall be endorsed and published, and certified printed copies shall be filed in the same manner as the original articles of incorporation, except that the filed printed copies shall be certified by the recording officer of the authority.

History: 1988, Act 57, Eff. Apr. 1, 1988 © 2009 Legislative Council, State of Michigan

RELEVANT NATIONAL STANDARDS

For fire operations sufficient personnel must be available in order to provide adequate fire protection to the community. The City of Battle Creek Fire Department can provide adequate minimum fire protection for the community, and can usually comply with two standards which, although not mandatory are considered an "industry standard" and often used to determine the number of firefighters required at emergency scenes: Currently it requires more than one firefighting unit to arrive before the City is compliant:

- The National Fire Protection Association (NFPA) Standard 1500 recommends that a minimum of four persons be available on the fire scene before structural firefighting commences.
- The Federal Occupational Safety and Health Administration (OSHA) has determined that fire structures meet the definition of an IDLH (Immediately Dangerous To Life and Health) environment and therefore are subject to the "two in-two out – rule" meaning there must be a minimum two-person rescue team besides the crews committed to structural firefighting. The International Association of Fire Chiefs (IAFC) have endorsed this standard.

With all fire and medic response units available, the City of Battle Creek Fire Department can meet the initial standards as outlined above, but must rely on mutual aid, like all agencies its size, to provide additional depth to care for escalating needs at the scene of a major fire or emergency. When personnel are thin, this ability to adequately provide adequate initial fire protection is compromised. Chief Schmaltz has maintained a cordial working relationship with nearby neighboring fire departments and these can be summoned to bolster The City of Battle Creek's forces when they are stretched thin. The City of Battle Creek, in turn, reciprocates often.

Additional perspectives on ideal staffing can be found in the Fire Protection handbook published by the National Fire Protection Association (NFPA):

- The NFPA Fire Protection Handbook states that a single family residential structure fire requires not less than twelve (**12**) firefighters and one chief officer with two engines and one ladder, and a commercial complex such as the Kellogg plant, requires not less than twenty-four (**24**) firefighters and two chief officers with four engines and two ladders on the first alarm.

In May 2002, the NFPA adopted two new related standards, #1710 and #1720. The former relates to larger full-time fire departments such as Battle Creek, and the latter refers to primarily volunteer departments. Among other requirements, these standard list "four" (4) persons as the minimum crew size on apparatus. The City of Battle Creek is not yet compliant with Standard 1710 but would be under the proposed new station configuration. See **Figure 9** on the next page for a capsule summary of NFPA 1710.

Figure 9—NFPA Standard 1710 Highlights*

- ✓ **Four (4) personnel per fire apparatus**
- ✓ **First fire unit arrives within 4 minutes 90% of time and the remainder of the assignment within 8 minutes 90% of the time.**
- ✓ **Fifteen to seventeen personnel on first alarm within eight minutes**
- ✓ **Quality and safety parameters**

***In the 2010 Version of 1710 and 1720, hard numbers were replaced with tasks required. Based on the tasks required, the numbers above are still representative of the needed workforce at an incident.**

The most obvious deficiency in Battle Creek for this standard is the four persons per apparatus since current staffing is two on a ladder and three on an engine. This can be rectified if fewer stations are needed and two engines and two quints are staffed. Additional perspectives on ideal staffing can be found in the Fire Protection handbook published by the National Fire Protection Association (NFPA) Theses are shown in **Figure 10**. In Battle Creek, as in most communities the department is unable to comply totally with this standard.

Figure 10 -- “Ideal Staffing per NFPA”

The NFPA Fire Protection Handbook 20th Ed. Table 12.1.1 states that a single-family residential structure fire requires not less than fourteen (14) firefighters, one chief officer, a safety officer, and a rapid intervention team with two engines and one ladder, and other specialized apparatus. A commercial complex such as the Kellogg's Cereal Plant, requires not less than twenty-four (24) firefighters, two chief officers, one or more safety officers, and rapid intervention team(s) with four engines and two ladders on the first alarm. In order to comply, Calhoun County has surrounding agencies to provide sufficient resources.¹

¹ National Fire Protection Association (2008) Fire Protection Handbook. Volume II, section 12, chapter 1, page 13. Table 12.1.1. National Fire Protection Association: Quincy, MA

Among the most routine of fires in Battle Creek would be a single-family dwelling. Staffing needs, including mutual aid, are shown in **Figure 11** below.

Figure 11

SINGLE FAMILY RESIDENTIAL HOUSE FIRE

3,000 sq. ft. in kitchen/dining room, 25% involved = 250 gpm water flow

POSITION	ASSIGNMENT	STAFFING
Incident Commander	Coordinates all on scene operations (Company Officers run command until ranking officer arrives)	1
Pump Operator	Maintains water flow to attack crews and radio communications (For safety requirements can not be counted for backup)	1
Ventilation	Removes heat, toxic gases and smoke improving victim survivability and safer environment for fire crews.	2
Primary Search	Rapid discovery and removal from toxic environment insures highest possible chance for victim survivability without brain damage.	2
Fire Attack	Two 1 ¾" Lines @ 125 gpm each for adequate water flow	4
EMS	Renders immediate medical care to rescued victims or injured firefighters	2
SUB TOTAL		12
Rapid Intervention Team	(Rescues trapped/injured/lost firefighters)	2 to 4*
TOTAL		14 to 16

***4 Person Minimum based on State of Michigan recommendations**

The above is again, an “IDEAL” staffing configuration. When personnel are scarce, and/or when working fires are contained rapidly, some of these positions can be combined.

ENSURING ADEQUATE RESOURCES

The elected officials in Battle Creek have been supportive of the Fire Department and have been willing to fund advancements to date. We anticipate continued support for additional resources commensurate with growth. Gradual increases or decreases in budgets over time seem to have been orderly and methodical, and are typically correlated with the economy and tax revenues as they rise or decline..

One Battle Creek resident speaking with the consultants at Clare's restaurant one afternoon discussed taxation with the consultants, and expressed a view likely held by the majority of the residents: "We don't mind being taxed if it is fair to all and equitably distributed."

Although there is a universal anti-tax dissatisfaction, many residents are willing to pay for quality emergency service improvements. Adequate funding will likely be available to provide additional services. Caution, however, is in order.

At times, community leaders will say, "Tell us what we should have for fire and rescue protection, and we will find a way to pay for it." Unfortunately, there is no easy answer, since it is virtually impossible to separate what a community *should have* and what is affordable. It is not feasible to separate a decision regarding the level of fire and rescue protection from financial concerns, since the two are very much interrelated. Once a fundamental level of Fire protection is in place, (as is the case in Battle Creek) each additional fire company is of marginally less value than the previously added resource.

In Battle Creek the first Engine Company provided a major difference between any fire protection or none at all. The second improved response time for some portions of Battle Creek and provided "depth." A third engine in like manner, was valuable, but not as valuable as the second. The fourth engine is of marginally less value than the third, and so forth. The same logic could be employed to analyze the value of additional fire stations, or firefighting units.

The level of fire protection must include "affordability." An extreme example is found on some Native-American Indian Reservations here in the U.S.A. Fire protection consists of several lengths of old fire hose connected to water mains, in the hope that someone will put the hose to use in the event of a fire. They simply cannot afford anything more.

Another example of the interrelationship between budgeting and fire protection can be found in Norwood, Ohio. When a Chevrolet Camaro Plant closed in the City of Norwood, it suddenly had one fire station, when once it had three. The citizens of Norwood saw an across-the-board reduction in all governmental services. At some point, fiscal responsibility imposes a level of Fire protection that should not be exceeded.

With fire protection, it is very easy to make decisions based on emotional arguments such as: “if the fire station saves one life, it will be worth it.” It may very well not be worth it if neglected streets (poor signaling, rough pavement, etc.) cause two or more traffic fatalities, or if an under-funded police agency leads to more deaths from violent crime. All governmental services must be kept in a balance by Battle Creek officials.

Consider a community that has to choose between the purchase of a new salt truck or a new fire truck. The fire truck might indeed save one life but if a lack of treated streets leads to a multiple fatality accident, there is a net loss of life due to the purchase of the fire truck. All governmental services should be kept in a balance by elected officials.

Even if one could guarantee that one *could* save a life by adding a fire unit, most members of society would still want to weight this option against a “quality of life” factor. People *want* aesthetic beauty (parks, for example), and conveniences such as transportation. People are as a society willing to incur some risks to have this quality of life. Limited tax dollars need to be balanced among safety services and other Community needs, especially in light of the fact that some public funds might be expended better elsewhere.

If the Battle Creek officials were to introduce a plan that would eliminate 100% of all highway fatalities in Battle Creek, it would certainly be more than “saving one life”. Therefore, should it be adopted? The solution would be to have no vehicle travel more than 10 miles per hour on any road within its boundaries. Battle Creek residents would likely find this unacceptable. Society members are generally daring and are willing to incur safety risks including occasional accidental fatalities in exchange for mobility in life and aesthetic beauty in our surroundings. Accordingly citizens are usually willing to spend only limited dollars for fire and rescue protection.

If we were to put a fire station on every major road in Battle Creek would it save one life? No doubt it would, but the price would be unpaved roads, a complete lack of any other basic services, and a populace taxed into poverty. Ultimately, there comes a decision point where “*the right level of fire protection*” must logically include the cost, and the effect on other government services. There is no equation that will dictate the proper number of fire units, and fire stations unless leaders are also willing to factor in the monetary cost of providing these.

Since the quantity and quality of fire protection remains then a subjective rather than an objective study, how does a jurisdiction determine what is best for its own citizens? That is, how much should be spent to maintain a balance between adequate fire protection, and adequate attention to other services provided by the community? One technique is to compare Battle Creek with similar communities nationwide, as we will demonstrate under National Staffing Trends, coming next in this study.

NATIONAL STAFFING TRENDS

As Battle Creek reorganizes its fire department, it may have to add personnel, or reconfigure staffing with no net increase. Since staffing is by far the largest item in a fire department budget personnel costs need to be calculated, both for the present, and projected into the future. Allowances must be made for inevitable pay raises and employment costs. Since full-time personnel require salaries, employer pension contributions and benefits and health care, their cost to the community is high.

What can be more expensive is an underfunded fire department which can cause high insurance rates and departing businesses and industry. In the economic downturn which has characterized recent years, the strength of the department has been reduced and the consultants believe it is time to reverse this trend with the reorganization discussed earlier in the report.

Occasionally, Fire Engineering, one of the most respected periodicals in the firefighting profession, assembles valuable statistical data on fire departments.. Key excerpts from the most recent edition of this publication, entitled "**Fire Engineering – Directory of Municipal Fire Departments,**" shows such statistics as trends in fire departments, members per 1000 population, full-time paid personnel, on-duty, minimum staffing requirements and minimum crew per apparatus.

According to the *Fire Engineering* Report, one statistic that has remained rather constant is the average number of fire departments members per 1000 population. According to the *Fire Engineering* Report, the number of firefighters per 1000 has consistently remained at about 1.6 since 1984.

Using 52,000 as the base population for Battle Creek the number of full-time firefighters would be $1.6 \times 52 = 83.2$, and this is close to the actual numbers on duty in Battle Creek. For a full-time department a close approximation of an on-duty force would be 20 to 21 (Calculated as $83.2/4$).

Nationally most departments today provide both fire protection and transporting emergency medical services, so that this average would include personnel for both of these functions. Since Battle Creek does not transport it can feel that it is more than adequately staffed and could, according to this statistic, take on EMS transport duties with little or no increase in staffing.

Because these overall national averages discussed above include the largest and most tax-affluent cities, the Consultants further analyzed fire departments in jurisdictions close in size to Battle Creek from Michigan and adjacent states in the region. This latest data was collected from current internet postings or from direct contact with the reporting agencies. These comparisons are shown in **Table K** on the next page. Due to the disparity in square miles of area served in the region, we reached beyond the region and produced a second comparison in **Table L** showing a comparison with larger land areas similar to Battle Creek.

Table K -- Regional Comparisons to Battle Creek

	Population	Sq. miles	No. of Fire stations	No. of uniformed personnel	Annual EMS runs	Annual Fire + other runs	Total Annual runs
MICHIGAN							
Dearborn Heights city	57,774	12.07	2	53	4897	1795	6692
Royal Oak city	57,236	11.83	3	71	3800	868	4668
Novi city	55,224	32	4		2920	1291	4211
Saginaw city	51,508	17.34	4	51	3rd pt	3234	3234
Kentwood city	48,707	20.95	3	55	3rd pt	4193	4193
OHIO							
Kettering city	56,163	18.4	5	54ft/50vol	5554	1904	7456
Elyria city	54,533	20.57	4	75	2185	1943	3860
Lakewood city	52,131	6.69	3	87	5321	1828	7149
Cuyahoga Falls city	49,652	25.5	5	90	5665	2113	7778
INDIANA							
Anderson city	56,129	40.2	7		15,700	300	16000
Noblesville city	51,969	58	7	126			
Elkhart city	50,949	35.69	7	124	9600	2400	12000
ILLINOIS							
Orland Park village	56,767	33	6	114	4853	3662	8515
Tinley Park village	56,703	16.04	4	132	1441	782	2223
Oak Lawn village	56,690	8.59	3	72	5179	2726	7905
Berwyn city	56,657	3.9	3	80			
Mount Prospect village	54,167	10.37	3	74ft/13pt	3938	1941	5879
Wheaton city	52,894	11.44	3	53	3500	1500	5000
Normal town	52,497	18.41	3	60	4663	1095	5758
Hoffman Estates village	51,895	20.98	4	95	4501	1126	5627

Regional Average	57,774	21.09	4.14	81.4	5232	1927	6564
Battle Creek	52,347	44	6	80	5413	1188	6601

**Table L -- Comparisons to Battle Creek
From Communities with 43 to 55 Sq. Miles**

	Population	Sq. miles	No. of Fire stations	No. of uniformed personnel	Annual EMS runs	Annual Fire + Other	Total Annual runs
OTHER							
Georgetown, TX	47,400	48	5	81	4640	1160	5800
Kingsport , TN	48,205	44	8	116	7650	1350	9000
Lake Havasu, AZ	52,527	43	6	87	5560	2794	8354
Palm Beach, FL	48,452	55	5	108	7673	1717	9390
"Other" Avg.	49,146	47,5	6	98	6381	1755	8136
Battle Creek	52,347	44	7	80	5413	1188	6601

The results of **Tables K and L** indicate that The City of Battle Creek has more stations than other communities with similar populations, but about the same as those with similar land areas and populations. Battle Creek could conceivably get by with fewer stations and fewer personnel than its regional counterparts since it does not perform the EMS Transport function. In our mapping section we showed how the city could be protected nicely now with five stations, including a joint airport/municipal facility.

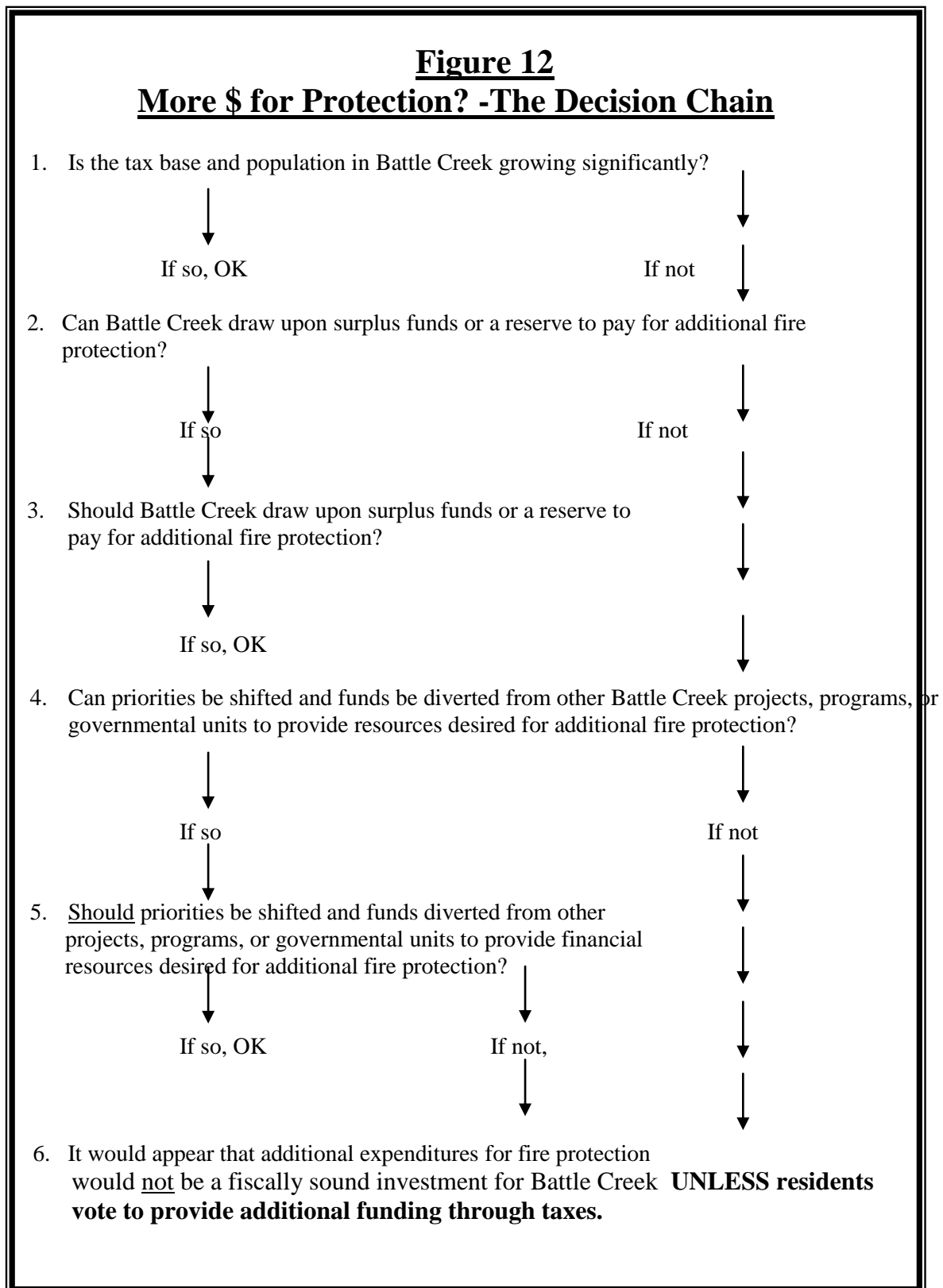
To determine proper staffing levels, Another approach is to start with the communities served and try to measure what is really needed.

As Fire Department and City Officials deliberate on proper fire and EMS protection levels, they often want to find some *measurable* quantitative standard that can be applied in their communities. An example which could be applied in Battle Creek would be:

"We want 90% of all residences and business establishment inside the City of Battle Creek to be within 4 minutes of a responding engine company with a cross-trained fire/EMS crew"

Utilizing time distance analysis and geographic projections the City of Battle Creek could determine where the fire stations would have to be located to produce such a result. These station locations could be coupled with desired strength levels on units to provide the "right-size" Department. Even in this case, however, the standard breaks down as soon as one company is already busy on one emergency when a second emergency occurs in the same area necessitating a more lengthy response from another unit. Hence, the decision regarding quantity of fire companies and emergency medical service units remains fairly subjective despite the best efforts at quantifying it.

One helpful technique to determine whether or not to expand the use of general fund monies for fire services (beyond both historical levels and beyond new funding provided by any new tax levy) is shown below in **Figure 12**.



BUDGETING AND FINANCE

The report which follows is from the City of Battle Creek Web site and shows a November, 2014 Budget summary. As with most municipalities, public safety, (Police and fire) comprises more than 50% of the total budget.

Local Unit Name: City of Battle Creek
Local Unit Code: 132020
Current Fiscal Year End Date: 6/30/2015
Fund Name: General Fund

REVENUES	Current Year Budget	Percentage Change	Year 2 Budget
Property Taxes	\$ 14,496,470	1 %	\$ 14,641,435
Other Taxes	\$ 3,000	- %	\$ 3,000
State Revenue Sharing	\$ 5,478,249	2 %	\$ 5,587,814
Income Tax	\$ 16,450,000	2 %	\$ 16,779,000
Fines & Fees	\$ 150,500	1 %	\$ 152,005
Licenses & Permits	\$ 720,598	2 %	\$ 735,010
Interest Income	\$ 775,197	2 %	\$ 790,701
Grant Revenues	\$ -	- %	\$ -
Other Revenues	\$ 3,904,912	3 %	\$ 4,022,059
Interfund Transfers (In)	\$ 1,240,337	- %	\$ 1,240,337
Total Revenues	\$ 43,219,263		\$ 43,951,361
EXPENDITURES			
General Government	\$ 6,901,057	1 %	\$ 6,970,068
Police and Fire	\$ 24,741,284	2 %	\$ 25,236,110
Other Public Safety	\$ 1,584,743	(1) %	\$ 1,568,896
Roads	\$ -	%	\$ -
Other Public Works	\$ 1,926,679	1 %	\$ 1,945,946
Health and Welfare	\$ -	%	\$ -
Community & Economic Development	\$ -	%	\$ -
Recreation & Culture	\$ 3,008,129	1 %	\$ 3,038,210
Capital Outlay	\$ -	%	\$ -
Debt Service	\$ -	%	\$ -
Other Expenditures	\$ 2,104,572	(1) %	\$ 2,083,526
Interfund Transfers (Out)	\$ 3,361,827	(8) %	\$ 3,092,881
Total Expenditures	\$ 43,628,291		\$ 43,935,636
Net Revenues (Expenditures)	\$ (409,028)		\$ 15,725
Beginning Fund Balance	\$ 8,149,015		\$ 7,739,987
Ending Fund Balance	\$ 7,739,987		\$ 7,755,712

On the following page we show how the budget has remained relatively stable in the Fire Department. through a ten-year period. This was accomplished through belt-tightening as retirees offset wages and staffing was reduced somewhat. The coming budget will show a moderate increase as the Fire Chief's reorganization is integrated into the organization.

The real need for fire department dollars, however, will be for longer range investing in fire apparatus and facilities (Fire stations). The consultants see these as investment opportunities that will pay huge dividends to the citizens and businesses of Battle Creek.

Battle Creek Fire Operating Budget	
Year	Budget
2004	8,731,623.00
2009	9,271,002.00
2014	\$8,912,825.00

As city government grows, usually all departments, fire, police, roads, recreation etc. grow in equal proportion. It would stand to reason that tough economic times would dictate that they should be decreased in some similar proportional manner. Some tweaking of this could be justified if the City leaders see a special need for road pavement, crime prevention or fire and EMS protection. Significant changes in operating budgets for both police and fire departments involve personnel additions or subtractions.

Table M shows that if the total annual cost of one full-time firefighter is \$85,000 these costs rapidly. To be compliant with NFPA 1710 four persons are needed on an apparatus. If there are three shifts there is a need for 12 persons (3x4) plus approximately 2 more to cover vacations, sick days, and other absences. Hence we calculate the annual staffing for one 4-person engine or quint to be 14 x \$85,000 or \$1,190,000

<u>Table M -- Costs for Full-time Position: (x\$1000)</u>					
	A Shift	B Shift	C Shift	Relief	Total Annual Dollars:
Positions:	4 x 85 K	4 x 85 K	4 x 85 K	2 x 85 K	
	\$340 K	\$340 K	\$340 K	\$170 K	\$1,190,000

While the cost of fielding a fire department is expensive in the community, the cost of no fire department is considerably higher and would in theory make it unaffordable for commercial enterprises to operate due to exorbitant fire insurance rates that would ensue.

Available Grant Funding

Running a professional fire department costs money, with the lion's share going to salaries as we have just seen. One way to fund equipment and personnel is grant funding. There are numerous sources of grant funding available to fire departments in Michigan. After inquiring about previous efforts to secure these grants, it is clear that the Chief Schmaltz has been quite in tune with the grant availability.

Battle Creek deserves credit for the grant funding it has obtained (See "Topic" below), and efforts to secure additional funds are already in progress. One note of caution is in order: any Fire Agency, which wishes to be the recipient of Federal Grant Funding, must be able to demonstrate that they utilize the National Incident Management System (NIMS).

Topic : Fire Haz-Mat Team receives equipment grant

With a scene full of dangerous chemicals just a potential phone call away, the Battle Creek Fire Department has responded proactively by ramping up its Hazardous Materials Team and, most recently, receiving a \$1,000 grant for equipment.

The funds are part of 110 awards this year, totaling more than \$121,000, from the Enbridge Safe Community program. They will help the department purchase a grounding and bonding detection kit. Discharging static electricity at a scene is one of the first things fire fighters must do, to prevent explosions.

For example, if a tractor-trailer carrying a fuel rolled over, the fuel would have to be removed from the truck. The truck may have static electricity buildup, so the kit would include wiring to place from the truck to a grounding rod, which would then distribute the static into the earth and allow for safe removal of the carried product.“ It takes the department, the team and the city to a level at which most haz-mat teams cannot perform,” said Chief David Schmaltz. “This is a very specialized procedure and it’s all about making sure we’re prepared for the worst-case scenario.

Battle Creek can likely qualify for the following grants, although they are awarded based upon competitive application:

The Staffing for Adequate Fire and Emergency Response (SAFER) ACT is comparable to the COPS grant for police departments in the 1980’s. One part of this funding will provide \$65 Million in personnel funding in this year’s funding period. See **Appendix 18** for information on applying for SAFER Grants for 2015, and for an article on Michigan Applicants.

The Assistance to Firefighters Act, commonly called the Fire Act Grant, has been available since 2001, and provides about \$650 Million in funding for specific equipment, apparatus, and public education funds. The application period begins at the end of March and closes in early April.

As noted above, there are various Michigan grants, equipment grants, and training grants available. In addition, there are weapons of mass destruction (WMD) grant funds available through the State Emergency Management Agency (EMA) for providing equipment and resources for homeland security issues, which often overlap the needs of firefighting personnel, particularly in the area of training, and safety gear such as SCBA's, etc.

As this report was being prepared, a tragic story broke about seven children dying in a Brooklyn, New York residential fire. This sad scenario is sadly repeated too often and leads many fire departments to reconsider the balance between fire prevention and fire suppression. See the insert on the next page regarding a new NFPA grant for residential sprinklers

TWO ARTICLES IN APPENDIX 18:



1. Nine keys to a competitive SAFER grant

The grant period opens in about two weeks; have these bases covered to give your application the best chance at success



2. Fight in Congress, potential FEMA shutdown could affect fire grants in 84 Michigan communities

NFPA RSS NEWS FEEDS

NFPA LAUNCHES HOME FIRE SPRINKLER GRANT PROGRAM

Grants to fund sprinkler campaigns across North America



March 23, 2015

To further the life-saving impact of home fire sprinklers, the [National Fire Protection Association's](#) (NFPA) [Fire Sprinkler Initiative](#) today announced the launch of a new grant program to help fund sprinkler advocacy campaigns across North America.

The [Bringing Safety Home Grant Program](#) will assist as many as 10 selected [U.S. state sprinkler coalitions](#) and other safety advocates with up to \$10,000 grants to support activities that showcase the importance of home fire sprinklers. Sprinkler advocacy is gaining momentum as more residents and policy-makers understand the value of the devices in new homes. Home fire sprinklers can reduce home fire deaths by about 80 percent and direct property damage by about 70 percent, according to NFPA research.

The vast majority of U.S. fire deaths occur in homes. In 2013, home fires caused nearly 2,800 deaths out of more than 3,000 total fire deaths and injured more than 12,000 others in the U.S. The life-saving capability of home fire sprinklers is the reason why all model building codes require sprinklers in all new, one- and two-family dwellings.

"At NFPA, we are committed to doing all we can to make sure that more people are protected by sprinklers at home," said Lorraine Carli, vice president of Outreach and Advocacy at NFPA. "To help save lives, the Fire Sprinkler Initiative's Grant Program supports the great ideas of sprinkler coalitions and other safety advocates across North America."

Grant applicants throughout the U.S. and Canada can apply for up to \$10,000 to fund a proposed home sprinkler campaign or project in their state or province that underscores the necessity of sprinklers. The grant program spurs innovative thinking for sprinkler advocacy, with questions including: How can this grant help further the message in your state or region that sprinklers in new homes save lives? Is there a new way to educate the public and decision-makers on the value of home fire sprinklers? How can you expand on a tried-and-true method of sprinkler advocacy? NFPA has also developed a number of campaign options to help inform applicants' proposed ideas.

Applications, available at firesprinklerinitiative.org/grant, must be submitted to firesprinklerinitiative@nfpa.org by April 20, 2015.

About the Fire Sprinkler Initiative®

The Fire Sprinkler Initiative®, a project of the National Fire Protection Association, is a nationwide effort to mandate the use of home fire sprinklers and the adoption of fire sprinkler requirements for new construction. Visit the Fire Sprinkler Initiative website at www.firesprinklerinitiative.org.

About the National Fire Protection Association (NFPA)

NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess.

Contact: [Lorraine Carli](#), Public Affairs Office: +1 617 984-7275

EXCELLENCE CHECKLIST

This report has already referenced several of the key NFPA (National Fire Protection Agency) standards and showed their relevance to staffing issues in Battle Creek . Since the NFPA is a non-profit information collection center and internationally respected authority for the fire protection industry, it can provide useful guidelines for organizations wishing to improve themselves.

In terms of the future, one of the most comprehensive standards is NFPA Standard 1201, *Developing Fire Protection Services for the Public*. This Standard, which was introduced back in the year 2000, is an excellent checklist for fire agencies that want to list potential areas for improvement as they plan ahead. This standard will be helpful to Battle Creek fire officials as they ensure that they are “covering all the bases.” **Table N** shows key component sections of NFPA Standard 1201.

Table N

KEY SECTIONS OF NFPA STANDARD 1201

- Purpose of a Fire Departments
- Governmental Responsibilities
- Strategic (Master) Planning
- Organizational Structure of the Fire Departments
- Financial Management and Budgeting
- Human Resource Management
- Training
- Organization for Fire Suppression
- Emergency Scene Management
- Emergency Medical Systems
- Community Relations
- Public Fire Safety Education
- Code Enforcement
- Fire Investigation
- Communications
- Equipment and Buildings
- Management of Water for Fire Protection
- Hazardous Materials
- Major Emergency Management
- Management Reports and Records

INSURANCE SERVICES OFFICE (ISO)

Nationally the frequency and severity of fires are declining. Although fire suppression services are, in terms of total responses, becoming less frequent, they remain the most important services delivered by the fire Department when fires do occur.

The Insurance Services Office (ISO) is an independent auditing organization funded by insurance companies. The ISO conducts a thorough site visit to the community and analyzes fire stations, staffing levels, fire apparatus, equipment carried on apparatus, training records, water supply, and all the other component parts that affect the quality of fire service delivery.

The ISO conducts a thorough site visit to the community and analyzes fire stations, staffing levels, fire apparatus, equipment carried on apparatus, training records, water supply, and all the other component parts that affect the quality of fire service delivery. The ISO rates fire departments on a scale of 1 (the very best) to 10 (the most deficient). The City of Battle Creek is rated #3 in areas with hydrants -- quite favorable. The consultant believes that on-duty personnel and training enhancements and apparatus and station upgrades will allow the department to move to a Class 2, making the City of Battle Creek more attractive to commercial properties due to potential insurance savings from some carriers.

Although *State Farm* and some other large insurance companies have discontinued using ISO ratings in favor of a “zip code based” rating system, the ISO rating scale remains the most widely accepted objective measure of fire protection.

Harry Hickey, Ph.D., a fire protection engineer from the University of Maryland, has published a 244-page manual listing a complex array of formulas and equations, which are used when ISO evaluates a jurisdiction for fire protection. An analysis of this manual was conducted to determine if the use of cross-trained personnel to assist LifeCare in the field, and perhaps someday man ambulances would hinder the chance to retain or improve upon Battle Creek's Class 3 ISO rating.

Based on an analysis by this Consulting team, it appears that the effects of EMS duties are minimal, and are more than offset because of the usual availability of these personnel to handle fire emergencies. The rating could actually improve if Ambulance transport fees some day fund additional cross-trained personnel.

See **Appendix 19** for an article on how Center Township in Northern Indiana improved its ISO rating. One interesting factor is that the ISO would like to see each location within the urban area within a mile and a half of each Engine Company, and two and one-half miles from each ladder company. These are road miles and will be approximated with the four-minute polygons on the station location maps prepared by MSA Architects.

In some improving rural areas of Calhoun country residential rates are improved as the classification improves beyond a 9 up to the rating of 6. Ratings of 1 to 6 provide the same lower premiums for *residential* units. Commercial savings continue as ratings improve from 6 to 1.

IMPLEMENTATION OF IMPROVEMENTS

The City of Battle Creek is facing a triple need for updated fire stations, newer apparatus, and perhaps a few additional personnel in a reorganization. These are all costly challenges, and the only way that either the City of Battle Creek or its fire department will be able to effectively tackle them simultaneously is to plan in advance using an objective-setting format.. Planning can be done on a daily basis, a weekly basis, a monthly basis, a yearly basis, or a multi-year basis.

The Fire Chief's Handbook provides concise directions on how to prepare for the future:

“Looking ahead and creating a scheme or method to attain a particular goal or objective is called *planning*. Before any endeavor can be launched, a plan of action must be developed. In the management arena, planning precedes the other four management functions since it is an integral part of each function.

Planning as a function of management affects every level of the organization, from first-line supervisors to top-level commanders. Properly prepared plans assure us of the most successful outcome of any activity, whether it be the daily duties of a firefighting unit or the long-range plans of an entire department.” [Source: *Fire Chief's Handbook*, Ch. 6, pp. 230-231.]

The Handbook goes on to state that for planning to be effective, it must neither be done in a vacuum nor be rigid. Planning in a vacuum is planning without taking into consideration the needs of the community, its citizens, the members of the department, and the department itself. Effective planning would involve specific plans, for example, on how to use the new reorganization for meaningful improvements

The first way to begin planning is to start with a goal statement and then list the steps necessary to accomplish the goal. Plans can be long, intermediate, or short-range. Short-range plans are the most specific and should contain the following information:

- List of tasks to be accomplished
- The people and/or units and their alternatives, that accomplish the tasks
- The resources that will be required, such as materials and equipment
- Time frames and deadlines
- Control and reporting systems

Intermediate plans will be more vague than short-range plans. Intermediate two to three-year plans must allow for changes in personnel, shortfalls in the budget, or changes in department philosophy. Long-range plans of more than three years might be only a broad goal statement. As the time to begin implementing long-range planning nears, development of the plan becomes more and more specific. Component parts of long-range goals become short-range objectives. Common time frames are labeled as follows:

- Short-range ----- One Year
- Intermediate Range ----- 2 to 3 years
- Long-range ----- 3 to 20 year

PLAN 2015 EXAMPLE

Let's consider how Chief Schmaltz might create a list of objectives established in a participatory fashion for the Battle Creek Fire Department.

For each of the three shifts the Department could have three consecutive retreat sessions where all members of the fire department are invited to contribute ideas. These can be retreat sessions scheduled off-site and off-duty, or can be held centrally during duty hours with all activities except emergency response suspended for three consecutive days.

All members are encouraged to provide suggestions, and recommended goals for the fire department. All of the grass roots input from these three retreat sessions are then collected, and massaged by the staff of chief officers in this department. From this, a list of specific objectives for the coming calendar year are published.

This "Master Plan 2015" includes goals that are broken down into component parts. Time lines are established and individuals who were responsible for their achievement are identified. While the nature and types of objectives will vary from one fire department to another, this process, which holds persons responsible and pegs their actions to target dates, is virtually assured of achieving progress toward the desired goals.

Figure 13 on the next page shows a status chart dating to 2006 and used in Deerfield Township Fire Department, Warren County, OH to track the progress of objectives. The color-coding scheme is as follows:

1. Red – Behind schedule
2. Yellow – Close or not applicable
3. Green – On schedule

On this sample chart, most of these ambitious fire department goals are being achieved. One can only speculate about how many of these positive achievements would not have materialized in the absence of the annual plan, mapped out in advance.

While putting together the annual plan, several of the objectives may well contain component parts of a multi-year plan. Objective # 17 on this sample addresses a conversion from a combination department to a fully-paid department. While this is a longer-range objective, the first steps were scheduled back in the year 2002, and the next phases were planned in 2003, 2004 and 2005. In this way, longer-range goals and objectives designed to meet future needs over a multi-year period can be incorporated into an annual plan by including component parts of the longer-range objectives.

One multi-phase objective that might emerge for Battle Creek might be plans for one or more new fire stations. While Plan 2015 represents an annual plan, new station construction will, in reality, take several years to fund, plan and construct. Hence the current plan will contain the first stages and subsequent yearly plans will have later component parts.

It is the goal of Kramer and Associates and MSA Architects to assist Battle Creek in preparation of a three to ten-year strategic plan that the Fire Department can follow as a guide or “roadmap” to ensure their success into the future. Because the community growth and dynamics may change the future outlook and services needed by the community, it is probably not necessary to project further than this.

Battle Creek has a progressive City Manager willing to endorse quality financial and administrative planning, and the Fire Chief has a similar management perspective. They have both made considerable progress towards necessary planning already. Since Battle Creek is at a pivotal point in terms of defining the future of its fire and rescue protection for the city, it can profit from the techniques presented in this section.

Table R on the next page is an outline of the present, 3-year, and 10-year projections for Battle Creek. This is the initial framework for long range planning.

Figure 13 -- Master Plan Status Chart

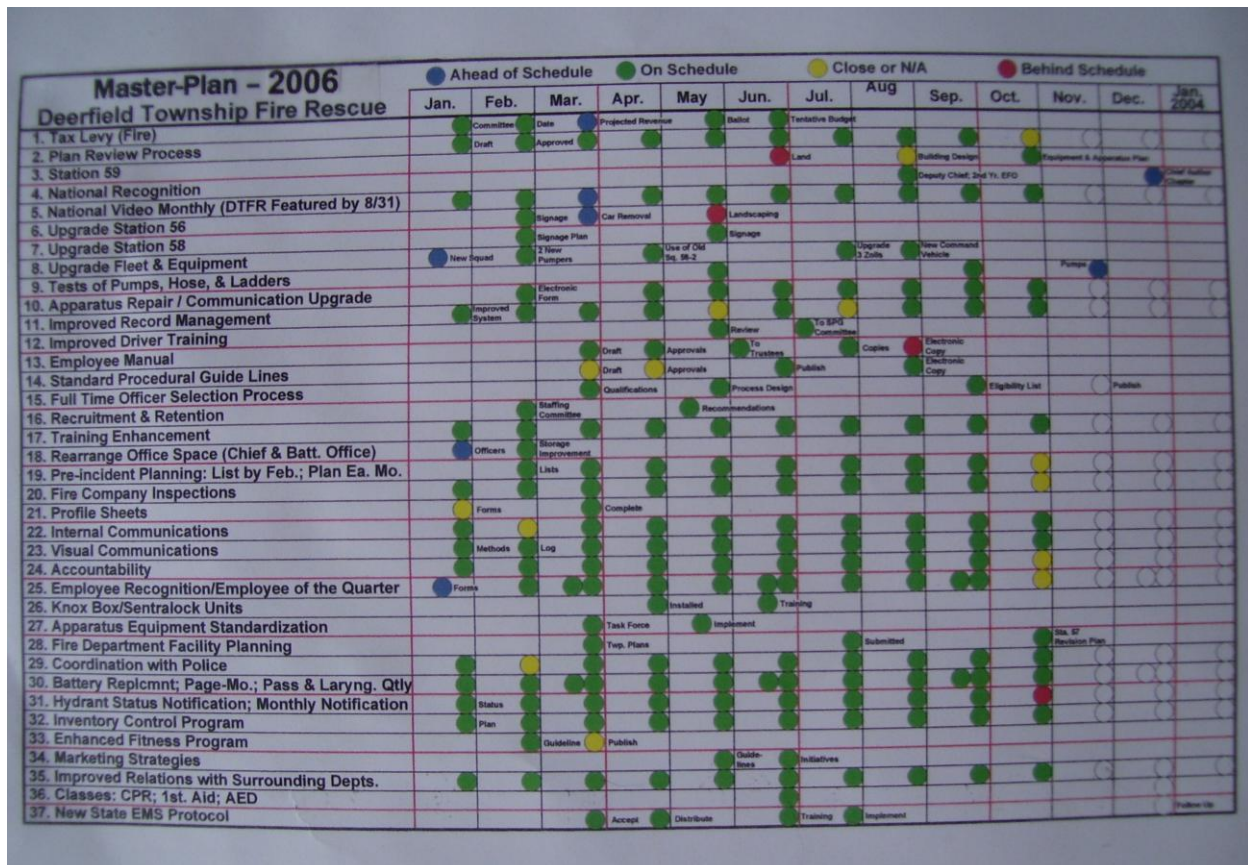



Table R --BATTLE CREEK FIRE DEPARTMENT: NOW; IN 3 YRS; IN 10 YRS

	PRESENT	THREE (3) YEARS FROM NOW	TEN (10) YEARS FROM NOW
ORGANIZATION SUPERVISION	Chief + Two 40-hour Batt. Chiefs	Chief Three 24-hour Batt. Chiefs + Floating B.C.	Chief, Three 24-hour Batt. Chiefs + Floating B.C.
FACILITIES	Outdated Fire Stations	First two new stations	Two additional new stations (4 Total)
APPARATUS FLEET	Aging engines and Ladder truck	New Engine and quint	Additional engine and additional quint
PERSONNEL CERTIFICATION	Firefighter/ Medical First Responder	Firefighter/EMT	Firefighter/ Paramedic
EMS	1 st Response	Possible ALS and Transport	ALS and Transport
OPERATING BUDGET	\$8,912,825.00	\$9,804,000	\$11,600,000
KEY CAPITAL INVESTMENTS	New Station 1 and 4	New OR Refurbish Stations 5 and 6	New Station in Northwest
ISO RATING	Three (3)	Two (2)	Two (2)
NUMBER OF STATIONS	Seven (7)	Five (5)	Six (6)

CONCLUSION

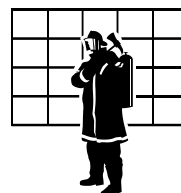
Battle Creek can move boldly forward with implementation of new plans and objectives based on the findings and recommendations of *MSA Architects* and *Kramer and Associates*. Ideas in this report provide the outline for a ten-year strategic plan that the Battle Creek Fire Department can follow as a “roadmap” for continuing to ensure their success into the future. Battle Creek is a beautiful area, and careful planning is essential to maintaining the existing quality of life in the community. The Fire Department is an integral part of a community’s culture.

The City of Battle Creek can be proud of the fine fire and rescue personnel which have served the city for years. The City Commission, City Manager and leaders in the current fire department are commended for their efforts in planning for a strong force. All deserve credit for seeking neutral outside input that will strengthen their ability to provide service in the future.

The consulting team agrees that Battle Creek is at an opportune time in its history when it will profit by planning and preparing for a different future. The economy presents new financial challenges at a time when new and increasing challenges face the Emergency Services. The City of Battle Creek will feel the effects of a more dangerous world, either directly or indirectly.

The firm of **Kramer and Associates** has been asked to review fire protection in communities of many different sizes and in many diverse geographical locations. It can be said that the fire and rescue protection in The City of Battle Creek ranks quite well when compared with that provided in similar-sized jurisdictions.

Nothing really will happen with this report, however, unless there is follow-up action to initiate the key components deemed advisable. Hence it is our strong recommendation that while the contents of this report are fresh, and are being discussed by the key stakeholders, that leadership act to commission an implementation task force, charged with the responsibility to make the suggested improvements a reality.



APPENDIX 1

Consultant Resumes



Resume -- WILLIAM M. KRAMER

9 Heritage Rd.
Cincinnati, OH 45241

Phone: (513) 678-2279
Birth Date: 1-28-44

Daughter - Cari Ann, Paramedic
wmkramer@zoomtown.com



Educational Background

B.S.I.M.	Industrial Management	University of Cincinnati, 1968
B.B.A.	Management	University of Cincinnati, 1968
M.B.A.	Personnel Administration	Xavier University, 1970
M.A.I.R.	Industrial Relations	University of Cincinnati, 1977
Ph.D.	Major: Management	University of Cincinnati, 1977
	Minors: Law & Indust. Rel.	(Ph.D. GPA: 3.78)

Fire Service Background

Volunteer Fire Service: Volunteer Firefighter 1962 - 1969, Green Township; Vice President of FF Association 1967-1969.

Career Fire Service: Cincinnati Fire Division: Firefighter – 1973 to 1981; Lieutenant – 1981 to 1983; Captain – 1983 to 1987; District Chief – 1987 to 1993; 1994; Assistant Fire Chief - Feb. 1993; Acting Fire Chief April, 1993 (Chose Directorship at University)

Fire Chief: Indianapolis International Airport, April 1995 - 1998.

Fire Chief: Deerfield Township Fire Department, Warren County, OH October 1998 – January, 2006

Academic Background:

1971 - 1981	University of Cincinnati - Lecturer on Management
1975 - 1981	Xavier University - Assistant Professor of Management
1978 - Present	National Fire Academy: Open Learning Fire Service Program- Editor and Author
1981 - 1982	University of Minnesota - Adjunct Instructor - Open Learning Fire Service Program
1982 - 2008	University of Cincinnati - Associate Professor of Fire Science
2008 - 2009	University of Cincinnati - Professor of Fire Science
1982-1995, 2003-2009	University of Cincinnati Department Head, Director of Fire Science

Publications - Primary Author or Editor:

"A Managerial Analysis of Municipal Fire Departments
-- Ph.D. Dissertation – (Cincinnati: U. C. Press, 1977)
June 1977)

Article: "Management by Objectives in the Fire Service":

International Fire Chief; (Washington D.C., May, 1979)

Book: **Disaster & Fire Defense Planning**

Course Guide (Washington D.C.; Open Learning Fire Service Program, 1992)

Book: **Political and Legal Foundations of the Fire Service**, (Lexington, MA: Ginn Custom Publishing, 1992)

Book: **Advanced Fire Administration**
(Lexington, MA: Ginn Custom Publishing, 1992)

Book: **Fire Officer's Guide to Disaster Control**
(Fire Engineering, 1992)

Book: **Disaster Planning and Control** (Penwell, 2009)

Co-Author

Article: "MBO Pays Dividends in Three Areas in Cincinnati": **Fire Engineering** (N.Y.

Book: **Managing Fire Services**
(Washington D.C.: ICMA, 1979 and 1999)

Book: **Personnel Management for the Fire Service**; (Washington D.C. Open Learning Fire Service Program, 1979)

Book: **Community and the Fire Threat**, (Lexington, MA: Ginn Custom Publishing, 1994)

Book: **Fire Chief's Handbook**
Fire Engineering Books & Videos,
Saddle Brook, NJ, 1997

Article: **Fire Service Staffing**
Ohio Township Magazine, 2003

Educational Innovation:

1997- Present: Served as Educational Commentator for two video production companies, Developed program for offering collegiate credit for evaluation of contemporary issues in the Fire Service. **American Heat**, 1988-1997 - **Working Fire**, 1998- Present

Military Background:

U. S. Marine Corps - Captain - Platoon Commander; Active Duty: 1965 - 66; 1969 - 70; Active Reserves: 1966 - 69; 1970 - 1974.

Hall of Fame: 2006: Highest State of Ohio Fire Service Award and Induction into Ohio Fire Service Hall Of Fam

NESTOR MELNYK, AIA LEED AP BD+C

nmelnyk@msaarch.com

PRINCIPAL

Principal In Charge/Project Manager

Nestor is driven by a sense of duty and obligation and is inspired by solid, clean design that is neither trendy nor stylistic. It's a mix that enables him to over deliver time and again. His ability to see beauty in unpretentious, timeless quality makes him an MSA cornerstone. Therefore Nestor does a little bit of everything – some days he's in the office focused on project-specific issues, other days he's coordinating work and work efforts, and still others he is out and about at meetings, gathering information and making things happen.

SAMPLE RELEVANT EXPERIENCE

City of Cincinnati

Fire Station #35

City of Delaware

Fire Station #303

City of Fairborn

Fire Stations

City of Mason

Fire Station #51

City of Tipp City

Fire Station

City of Vandalia

Fire Station #1

Deerfield Township

Fire Headquarters

Miami Township (Greene County)

Fire Headquarters Master Plan

Miami Township (Hamilton County)

Fire Station 70

Springfield Township

Fire Headquarters and Administration Center

Symmes Township

Fire Station

Village of St. Bernard

Police and Fire Department

West Chester Township

Fire Headquarters

City of Dublin

Police and Safety Master Plan
Justice Center Expansion

City of Fairborn

Space Needs Analysis

City of Fairfield

Justice Center
Space Needs Analysis
Council Chambers Renovation

City of Forest Park

Facility Needs Assessment

City of Middletown

Municipal Court Renovations

City of Vandalia

Public Works

Deerfield Township

Public Works

Hamilton County Park District

Winton Centre - Park Rangers Headquarters

Springfield Township

Police Headquarters
The Grove Banquet Facility
Facilities Master Plan & Space Needs Analysis

Symmes Township

Hamilton County Sheriff's Patrol
Symmes Park Expansion Master Plan

Village of Indian Hill

Facility Needs Assessment
Public/Water Works Facility

Village of St. Bernard

Public Works
City Center Redevelopment

West Chester Township

Emergency Communications Center

SAMPLE ADDITIONAL EXPERIENCE

Anderson Township

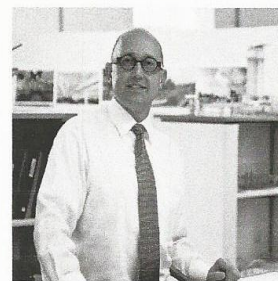
Public Works Master Plan

Clermont County

Clermont Transportation Connection
Emergency Communication Center
Juvenile Detention Center

City of Cincinnati

City Hall Renovations
Eden Park Pump House
Regional Maritime Operations Center
Police District #3
Waldvogel Viaduct



REGISTRATION & EDUCATION

Registered Architect:

Ohio #10110, 1992; NCARB Certified

University of Cincinnati, 1991

Master of Arts; Summa Cum Laude
University Graduate Scholarship

University of Cincinnati, 1990

Bachelor of Architecture
Magna Cum Laude and Valedictorian

University of Aegean

Kavala, Greece
Comparative Planning Program

Universita Cattolica Ucraina

di S. Clemente Papa; Rome, Italy,
Liberal Arts Studies

ORGANIZATIONS & AFFILIATIONS

AIA Cincinnati

Program Committee, 2006-07
Henry Adams Medal 1990

Cincinnati Public Schools

Tutor, 2008 – Present

Clifton Town Meeting

Housing/Zoning Committee, 2005-12

Hamilton Cty DD Services Board

Eligibility Appeals Committee 2012-13
Ethics Council Member, 2011-12
Vice President, 2013-Present

Leadership Cincinnati, Class 33

Program Steering Committee 2010-13

National Fire Protection Assoc.

Ohio Dev. Disabilities Council, 2005-10

Children's Issues Committee,
Chair
Community Living Committee
Public Policy Committee

Ohio School Board Assoc. (OSBA)

Ohio Assoc. of County Boards (OACB)

Society for College & Univ. Planning

University of Cincinnati

DAAP Alumni Board, 2011 – Present

INSPIRATION

*"You only get out of it what you put
into it. If you are a sheep in this world,
you're not going to get much out of it."*

- Greg Norman

MSA Architects
AIA Ohio GOLD MEDAL FIRM



Michael A. Washington

District Fire Chief — Cincinnati Fire Department

Michael A. Washington, CEAS Fire Science '08 alumnus, was promoted to District Fire Chief in March 2013 and now directs, manages, supervises, evaluates, and organizes all firefighting, emergency medical service, and other related emergency operations within Cincinnati city limits.

As a Queen City native, Washington has always dreamed of becoming a fire chief. Without hesitation, he entered the fire service in 1991 at a young age after graduating from Hughes High School. After a few years working as a part-time firefighter-emergency medical technician for Green and Colerain Townships' departments, Washington received an appointment to the Cincinnati Fire Department (CFD).

Washington first attained paramedic certification from D. Russell Lee Career Center, and was quickly promoted Rescue Unit Paramedic. He was then promoted to the rank of Fire Apparatus Operator and next, Fire Lieutenant. Washington worked with Engine Company 23 and Rescue 2 as a Fire Lieutenant prior to becoming Fire Captain. As a Fire Captain, he served as Company Commander of Engine 3 (Downtown) and Ladder 2 (Hartwell).

- A.A.S Fire Science University of Cincinnati
- B.S. Fire and Safety Engineering Technology
- EFO (Executive Fire Officer) Program; Fourth Year of four; Nat'l Fire Academy Career Fire Officer, Cincinnati Fire Department All ranks through District Chief (3/2013)
 - Public Information Officer for the City of Cincinnati Fire Department
 - Fire Apparatus Specialist
 - Representative for Sutphen Fire Apparatus
 - Ambulance and Mobile Intensive Care Unit Expertise
- Expertise with latest Hi-tech EMS Equipment, AED's, etc.
 - Faculty Member in Graduate Program, U.C. Fire Science
 - Active with Kramer and Associates for nearly two decades
 - Active member of Cincinnati African American Fire fighters' Assn.

DANIEL MONTGOMERY AIA LEED AP

dmontgomery@msaarch.com

ASSOCIATE

Project Architect

Dan is a problem solver and coordinator between consultants, contractors and clients. His experience and ability to focus on small details without letting them consume a project have enabled him to successfully work on projects of various scopes – from small office renovations to university buildings and schools. Dan is consistently able to find creative ways of addressing issues in the field before they become problems. And he has proven (green roof, rain gardens, bioswales) that he can incorporate sustainable design in ways that increase the value of the building while reducing its impact on the environment.



REGISTRATION & EDUCATION

Registered Architect
Ohio #13946, 2005

University of Cincinnati, 1997
Bachelor of Architecture
College of Design, Architecture, Art and Planning

ORGANIZATIONS & AFFILIATIONS

American Institute of Architects
Member

US Green Building Council
LEED Accredited Professional

SAMPLE RELEVANT EXPERIENCE

Madeira and Indian Hill Joint Fire District

Assessment Study
Madeira Station
Indian Hill Station

City of Delaware

New Fire Station #303

City of Massillon

Fire Assessment and Mapping

Little Miami Joint Fire and Rescue District

Newtown Station 76
Fairfax Station 66

Brunswick Hills

Fire Mapping Study

City of Monroe

Fire Needs Assessment Study
Fire Station 3

City of Tallmadge

Response Time Mapping

Champaign County

Response Time Mapping

Clear Creek

Fire District Master Plan

Granville Township

Fire Master Plan

Monroe Township

Fire Needs Assessment

Monclova Township

Response Time Mapping

Miami Township

Fire and EMS Master Plan

New Concord

Response Time Mapping

Perry Township

Fire Assessment and Mapping

Plain Township

Fire Department Master Plan

Pleasant Valley Joint Fire District

Master Plan

Ross County

Emergency Communications Mapping

West Licking Joint Fire District

Fire Needs Assessment Study

SAMPLE ADDITIONAL EXPERIENCE

Adams County Public Library* (2004)

Design Development and User Integration

Art Academy of Cincinnati* (2005)

Building and Streetscape

Eagle Savings Bank*

Retail Center Bridgetown Rd.

First Industrial Realty Trust*

Franklin Savings Bank*

Glenway Avenue

Savannah Center at Chapel Crossing* (2007)

Geothermal Systems Integration from Adjacent Lake to Building
40,000sf Banquet and Conference Center with Surrounding Landscaping

St. Susanna Meyer Center

Renovation

Xavier University

Alter Hall Renovation

Winton Woods Campground*

Office and Retail

INSPIRATION

"Make no little plans. They have no magic to stir men's blood and probably will not themselves be realized."

- Daniel Burnham

*Projects not performed with MSA Architects

Cari A. Kramer

9 Heritage Rd. Blue Ash, OH 45241

646-945-2610

Ckramer444@gmail.com

OBJECTIVE

To advance to a leadership position in either the Hospital Environment or in the Emergency Fire/EMS service utilizing my Education in Business and Marketing and my training as a paramedic. I wish to use my skills and knowledge to help those in the community who need my care.

- Personable and professional in appearance and manner
- Exceptional communication and interpersonal skills
- Proven ability to work with a wide range of personalities and cultures
- Skilled at multi-tasking and maintaining composure in stressful situations

EXPERIENCE:

Current

UNIVERSITY HOSPITAL, CINCINNATI ER Paramedic and

CITY OF WYOMING, OH fire department, field paramedic

JAMAICA HOSPITAL MEDICAL CENTER, FDNY 911 SYSTEM Queens, NY E MT

6/12-2/13

- Response to FDNY dispatched emergency 911 calls as a partnered ambulance to City of New York
- Monitored patients during transport and providing all necessary emergency medical care
- Performed daily inventory reports and restocking ambulance

7/11 – 2/13

MIDWOOD AMBULANCE

EMT

Brooklyn, NY

- Transport and care of medically ill and injured patients in emergency and non-emergency situations
- Frequent residential 911 calls for medical and trauma related emergencies
- Flag downs by residents for medical and trauma related emergencies
- Completing Patient Care Reports detailing events of transport
- Monitoring patients during transport and providing all necessary medical care
- Performing daily inventory reports and restocking ambulance

1/11-4/11

SENIOR CARE EMS

EMT

Brooklyn, NY

- Transport and care of medically ill and injured patients in non-emergency situations
- Completing Patient Care Reports detailing events of transport
- Monitoring patients during transport and providing all necessary medical care
- Performing daily inventory reports and restocking ambulance

EDUCATION / CERTIFICATION

January 2012

NEW YORK METHODIST HOSPITAL EMS INSTITUTE PARAMEDIC PROGRAM

Brooklyn, NY

ACLS Certified

PALS Certified

NTSB EVOC

Completed 572 Hrs of Clinical Rotations:

(On ALS ambulances, ER, OB, Psych, OR, Peds ER)

NATIONAL REGISTRY #: B2020030

NY State #: 387373

NEW YORK CITY BADGE #: 7658

EXPIRATION: 10/31/15

August 2010

UNITEK EDUCATION

Emergency Medical Technician , Advanced Curriculum

Courses of Study:

EMT-B, Glucometer, Intro to Advanced Airway, Endotracheal Intubations, Multilumen Airways

June 1998

UNIVERSITY OF CINCINNATI

Bachelors of Business Administration

Double Major: Marketing and Management

(13 Years working in Corporate Advertising sales for F500 Companies)

Randall W. Hanifen

6538 Red Pine Dr.
Liberty Twp. Ohio 45044
513-266-6124
Randall@Hanifen.org

Objective

To provide clients personalized solutions to their emergency service needs

Certifications

- Fire Officer Designee, CPSE,
- Firefighter Level 2, Fire Inspector
- Fire Instructor Level 2
- Paramedic
- Institute of Fire Engineers-Member
- NIMS 100, 200, 300, 400, 700, 800b
- EMI Professional Development Series-Emergency Management

Experience

West Chester Fire-Rescue 2/1998-Present

Lieutenant (Acting Battalion Commander)

Special Operations Manager for combination fire department. Manage station and frequently a shift of up to 31 mostly career personnel, growing from mostly POC personnel

- Oversaw establishment of a volunteer special operations team that functions through the county Emergency Management Agency, collaborating 11 agencies
- Develop, schedule, and review the training program for the department's special operations division and officer development

University of Cincinnati 1/2007-Present

Adjunct Professor

- Develop and teach fire science curriculum. Current classes include. Fire and Emergency Services Administration, Disaster Planning and Control, Managerial Issues in Hazardous Materials, and Fire Investigation
- Assist in the development of curriculum for the Fire and Emergency Services Higher Education Curriculum (FESHE)
- Member of the Masters of Emergency Management and Homeland Security development committee

Butler County Technical Rescue Team 5/2005-Present

Executive Chairman/Rescue Team Manager

- Act as agency chairperson. Oversee annual budget, strategic planning, hiring and promotion, as well as interagency interaction for an all volunteer agency

- Work as Rescue Team Manager for operational incidents
- Butler County ESF9 Coordinator and EOC Rep.

Kramer and Associates
9/2004-Present

Consultant/Planner

- Conduct strategic planning projects with fire departments in the region
- Conduct analytical projects measuring standards to current practices
- Conduct station location analysis with GIS
- Create budgets, long and short range plans for fire departments
- Create Labor-Management solutions through collaborative studies

Education

Northcentral University

Ph.D. Homeland Security

- Homeland Security Policy and Analysis
- Dissertation based on emergency services and emergency management collaboration
- GPA 3.90

Grand Canyon University

M.S. Executive Fire Service Leadership

- GPA 3.87
- Degree based on National Fire Academy EFO Program

Volunteer Work

**Ohio Task Force 1
FEMA US&R**
5/2002-Present

Task Force Leader

- Oversee hazmat team of the task force
- Lead 80-member team during federally declared disasters
- Responsible for implementing succession planning program.

Butler County IMAT Team

Planning Section Chief

- Lead IMAT through planning cycle
- Command groups and divisions under the planning section
- Serve as team commander in absence of commander

International Association of Fire Chiefs

Company Officer Committee

- Tasked with involving Company Officers in IAFC
- Lead Educational and Mentoring Subcommittee

Program (FRI) Planning Committee

- Responsible for selection of courses and updates to the

Company Officer Leadership Program

Safety, Health, and Survival Liaison-SHS Section

**Center for
Public Safety
Excellence
National Fire
Protection Assoc.**

Fire Officer Peer-Reviewer

- Review candidates for Fire Officer Designation
- Provide recommendations to Board of Directors

Fire Officer Professional Standards (NFPA 1021)

- Assigned to Technical Committee as Subject Matter Expert
- Assist in revisions to the Fire Officer Standard

Publications

**Disaster Planning
and Control (2009)**

Associate Author

- Penwell Publications
- Research and author updates to textbook on Disaster Planning and Control.

**Future of the Fire Service
(2010)**

Author

- Chapter of Personnel Management of the Fire Service
- Jones and Bartlett Publications
- Research prevailing issues of the fire service for next 10 years and personnel management practices to deal with changes

**IAFC On-Scene
(2010-Present)**

Author

- Regional Collaboration for Company Officers
- Higher Education in the Fire Service

Professional Affiliations

Member-Institute of Fire Engineers (MIFireE)

- Competency based acceptance, only 600 U.S. Members
- World-wide organization based in United Kingdom

Presentations

West Chester University (2008, 2009, 2010)

Working Fire Video (2002, 2005)

Butler County Technical Rescue Agency Information (2004-2011)

Ohio Township Association (2008)

Ohio GIS Conference (2009,2010)

Ohio Fire Chief's Conference (2011)

IAFC Board of Directors (2011)

Butler County Township Association (2012)

International Fire World (2012)

Available upon request

References



APPENDIX 2

Demographic Information



Battle Creek, Michigan

From Wikipedia, the free encyclopedia

Jump to: [navigation](#), [search](#)

"Battle Creek" redirects here. For other uses, see [Battle Creek \(disambiguation\)](#).

Battle Creek, Michigan

[City](#)

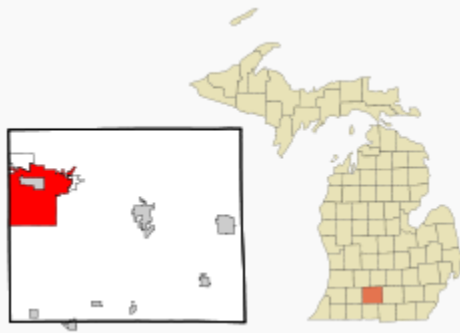
City of Battle Creek



Downtown Battle Creek in late 2008

Seal

Nickname(s): "Cereal City"^[1]



Location of Battle Creek within [Michigan](#)

Coordinates: [42°18'44"N 85°12'15"W](#)
[42.31222°N 85.20417°W](#)
 Coordinates: [42°18'44"N 85°12'15"W](#)
[42.31222°N 85.20417°W](#)

[Country](#) [United States](#)

[State](#) [Michigan](#)

[County](#) [Calhoun](#)

Settled 1831

Incorporation 1859

Government

• **Type** [Council-Manager](#)

• **[Mayor](#)** Dave Walters^[2]

• **[City Manager](#)** Rebecca Fleury^[3]

Area^[4]

• **Total** 43.73 sq mi (113.26 km²)

• **Land** 42.61 sq mi (110.36 km²)

• **Water** 1.12 sq mi (2.90 km²)

Elevation 840 ft (256 m)

Population (2010)^[5]

• **Total** 52,347 ([city proper](#))

• **Estimate** (2012^[6]) 51,911

• Density	1,228.5/sq mi (474.3/km ²)
<u>Time zone</u>	<u>Eastern (UTC-5)</u>
• Summer (DST)	<u>Eastern (UTC-4)</u>
<u>ZIP codes</u>	49014-49018; 49037
<u>Area code(s)</u>	<u>269</u>
<u>FIPS code</u>	26-05920 ^[7]
<u>GNIS feature ID</u>	0620755 ^[8]
Website	<u>battlecreekmi.gov</u>

Battle Creek is a city in the U.S. state of Michigan, in northwest Calhoun County, at the confluence of the Kalamazoo and Battle Creek Rivers. It is the principal city of the Battle Creek, Michigan Metropolitan Statistical Area (MSA), which encompasses all of Calhoun county. As of the 2010 census, the city had a total population of 52,347, while the MSA population was 136,146.

Battle Creek, known as the "Cereal City", is the world headquarters of Kellogg Company, founded by Will Keith Kellogg in 1906, whose brother, Dr. John Harvey Kellogg, invented cold breakfast cereal as an alternative to the traditional meat-based breakfast. It is also the founding location of Post Cereals which is now Post Foods, as well as the location of a Ralston Foods cereal factory owned by Ralcorp.^[9] Until 2007 it was the home of tourist attraction Kellogg's Cereal City USA.

Dr. John Harvey Kellogg, director of the Battle Creek Sanitarium, was featured in the T.C. Boyle novel *The Road to Wellville* and the movie of the same name. The Battle Creek Sanitarium, which is now the Battle Creek Federal Center building, is still one of the tallest buildings in Battle Creek. This building is a historical marker to the city and the state of Michigan.

In 1982, voters approved merging Battle Creek Township with the city of Battle Creek, under pressure from Kellogg Company, which threatened to move its headquarters away from Battle Creek if the city and township did not merge.^{[10][11]} Battle Creek is currently the third-largest city in Michigan by area, after Detroit and Grand Rapids.^[12]

Contents

[\[hide\]](#)

History and name origin

The name "Battle Creek" had its origin in a skirmish between a government land survey party led by Colonel John Mullett and two Native Americans. According to various accounts, while Mullett and his group were surveying an area several miles from the present city in the winter of 1823-1824, the work of the survey party was interrupted by Native Americans. Two members of

the party, who remained at the camp, were attacked by two Indians, reportedly attempting to steal the party's provisions. During the fight, shots were fired from a rifle, and the two white men subdued the Indians, inflicting a serious injury to one of them. The survey party promptly left the area and did not return until June 1824, after Governor Cass had settled the issue with the Indians. Due to this incident, the nearby stream was called the [Battle Creek River](#).^{[13][14][15][16][17]} The river was formerly known by the Native American name of Waupakisco, to which some attribute a folk etymology for the name. By this account, the name *Waupakisco* or *Waupokisco* was a reference to an earlier battle fought between Native American tribes before the arrival of white settlers. However, Virgil J. Vogel establishes that this native term had "nothing to do with blood or battle".^{[13][18]}

The first permanent settlements in Battle Creek Township began to be made about 1831, with most choosing to locate on the Goguac prairie, which was fertile and easily cultivated. A post office was opened in Battle Creek in 1832 under Postmaster Pollodore Hudson.^[19] The first school was taught in a small [log house](#) about 1833 or 1834. Asa Langley built the first [sawmill](#) in 1837. A brick manufacturing plant, called the oldest enterprise in the township, was established in 1840 by Simon Carr, and operated until 1903. The township was established by act of the legislature in 1839.^[20]

Battle Creek figured prominently in the early history of the worldwide [Seventh-day Adventist Church](#) as the location of its first hospital, college, and location of the church's founding convention in 1863.

During the Civil War era, the city was a major stop on the [Underground Railroad](#). It was also the chosen home of [Sojourner Truth](#).^[21]

Geography

According to the [United States Census Bureau](#), the city has a total area of 43.73 square miles (113.26 km²), of which 42.61 square miles (110.36 km²) is land and 1.12 square miles (2.90 km²) is water,^[4] making Battle Creek the third largest city in Michigan by area, and one of only three [incorporated](#) municipalities in the state over 40 sq mi (100 km²) in size.

- Approximately 60% of the city's land is developed. Of the undeveloped land, 38% is zoned agricultural, 26% is zoned general industrial, 17.5% is zoned residential, 16% is the Fort Custer Army National Guard Base/Industrial Park, and 2.5% is zone commercial.^[22]
- After Battle Creek Township merged into the city of Battle Creek in 1983, the city's declining population rose by nearly 18,000 new residents, but the city continues to decline in population. Prior to the merge, the city measured 18.6 square miles (48.17 km²).
- Battle Creek is variously considered to be part of [West Michigan](#) or [Southern Michigan](#).

Climate

[\[hide\]](#) Climate data for Battle Creek, Michigan

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F (°C)	68 (20)	68 (20)	82 (28)	90 (32)	95 (35)	100 (38)	104 (40)	103 (39)	99 (37)	90 (32)	80 (27)	66 (19)	104 (40)
Average high °F (°C)	31 (−1)	33 (1)	43 (6)	58 (14)	70 (21)	80 (27)	85 (29)	82 (28)	75 (24)	62 (17)	46 (8)	34 (1)	58.3 (14.6)
Average low °F (°C)	17 (−8)	17 (−8)	25 (−4)	36 (2)	47 (8)	57 (14)	61 (16)	59 (15)	52 (11)	42 (6)	31 (−1)	21 (−6)	38.8 (3.8)
Record low °F (°C)	−19 (−28)	−24 (−31)	−11 (−24)	10 (−12)	24 (−4)	35 (2)	42 (6)	39 (4)	28 (−2)	18 (−8)	−6 (−21)	−16 (−27)	−24 (−31)
<u>Precipitation</u> inches (mm)	2.1 (53)	2.1 (53)	2.4 (61)	2.8 (71)	3.6 (91)	4.0 (102)	2.9 (74)	3.0 (76)	3.2 (81)	2.9 (74)	2.5 (64)	2.1 (53)	33.4 (848)

Source: Weatherbase ^[23]

Other municipalities in the Battle Creek area

- [Bedford Charter Township](#)
- [Emmett Charter Township](#)
- [Pennfield Charter Township](#)
- [City of Springfield](#)

Culture

Print media[\[edit\]](#)

- The local daily newspaper and [newspaper of record](#) is the [Battle Creek Enquirer](#), owned and operated by [Gannett Company](#).^{[24][25]}

Radio and television[\[edit\]](#)

Battle Creek is served by several radio and television stations, including:

Radio

- [WTOU](#) (930 AM), the city's heritage radio station, now broadcasting a [sports format](#).
- [WBCK](#) (95.3 FM), a news/talk outlet
- [WBXX](#) (104.9 FM), "Mix 104-9", playing [adult contemporary](#) music
- [WBFN](#) (1400 AM), featuring Christian programming and simulcasting [WUFN](#)-FM in nearby [Albion](#)
- [WNWN-FM](#) (98.5 FM), playing country music, licensed to nearby [Coldwater](#) and based in Battle Creek
- [WFPM-LP](#) (99.5 FM), a low power station featuring [black gospel](#) programming
- [WKFR](#) (103.3 FM), a [top 40](#) music station licensed to Battle Creek with studios in Kalamazoo

Television

- [WOTV](#) An ABC affiliate serving Battle Creek, Kalamazoo and southwestern Michigan, and also serving as a secondary ABC affiliate for Grand Rapids
- [WZPX](#), an ION affiliate serving all of western Michigan
- [WWMT](#) A CBS affiliate licensed to Kalamazoo and also serving, Battle Creek, Grand Rapids and western Michigan
- AccessVision [Public-access television](#) on [Comcast](#) channel 16 & 17. AccessVision broadcasts to all municipalities within Battle Creek, and Newton Township.^[26]

WNWN-FM and WKFR are typically the top-rated radio stations in the market. The area can also receive radio and TV broadcasts from [Grand Rapids](#), [Kalamazoo](#), [Lansing](#) and other nearby cities.

Festivals]



2010 World's Longest Breakfast Table

- The World's Longest Breakfast Table
- The Battle Creek Field of Flight Entertainment Festival is an air show and balloon event held yearly in Battle Creek.^[27]
- International Festival of Lights^[28]

Music

Battle Creek is home to The Music Center,^[29] which serves South Central Michigan.

Battle Creek is the home to The Battle Creek Symphony Orchestra, whose home is at the W.K. Kellogg Auditorium in downtown Battle Creek.^[30] The symphony is currently conducted by Anne Harrigan, and is Michigan's longest-running symphony orchestra.^[citation needed]

The Brass Band of Battle Creek is composed of 31 brass players and percussionists from around the United States and Europe. “Created in 1989 by brothers Jim and Bill Gray, podiatrists and amateur brass players from Battle Creek, MI, the BBBC has grown to cult status in Battle Creek, where BBBC concerts are regularly sold out and waiting lists are created weeks in advance.”^[31]

[Leilapalooza](#) - The Leila Arboretum Music Festival is a free summer music festival held at the Leila Arboretum. Proceeds benefit the Leila Arboretum Society and Kingman Museum.^[32]

Sports

Battle Creek is host annually to the [Michigan High School Athletic Association](#) team wrestling, volleyball, baseball, and softball state championships. The town receives quarterly boosts to its economy from the fans that flock there to follow their teams.^[33]

Each year, Battle Creek hosts the [Sandy Koufax 13S World Series](#), for 13-year-old baseball players.

In August, 2010, Battle Creek was host to the eighth edition of the [International H.K.D Games](#).

Sports teams

Downtown Battle Creek

The [Battle Creek Bombers](#) are a collegiate baseball team, a member of the [Northwoods League](#), who began play in 2007. After a last place finish in 2010, the Bombers went 47-26 in 2011 and won their first [NWL](#) championship.^[34] It was the first championship in Battle Creek since 2000, when the [Michigan Battle Cats](#) won the [Midwest League](#) championship.^[35] The team's home is [C.O. Brown Stadium](#). In 2011, the team signed a 5 year lease which guarantees the teams 10 year anniversary in Battle Creek in 2017.

The [Battle Creek Knights](#) are a minor league basketball team. They were a charter member of the [International Basketball League](#) (IBL) and went 21-0 during the league's first season in 2005, winning the championship. The team's home is [Kellogg Arena](#). After announcing in July 2009 that they would sit out the 2009 season, in October the team announced that they would return to play in the International Basketball League.^[36]

The [Battle Creek Revolution](#) are a member of the [All American Hockey League](#) and began play in 2008. The team's home is [Revolution Arena](#).

The Battle Creek Blaze is a not-for-profit, adult football team that plays NFL rules football as a member of the IFL (Interstate Football League). The Blaze organization raises funds and community awareness in the fight against cancer. They are in their sixth season of operation, and won the IFL North Division Championship in 2010.^[37]

The [Battle Creek Cereal Killers](#) roller derby team began in 2011.^[38]

Former sports teams

The [Michigan Battle Cats](#)/[Battle Creek Yankees](#)/[Southwest Michigan Devil Rays](#) were a Class A [minor league baseball](#) team that played in the [Midwest League](#) from 1995 through 2006. The team's home was [C.O. Brown Stadium](#).

The [Battle Creek Crunch](#), were a member of the [Great Lakes Indoor Football League](#) (GLIFL), that began play in 2006. They played only one season in Battle Creek before ceasing operations due to financial trouble. The team's home was [Kellogg Arena](#).

The [Battle Creek Belles](#), a member of the [All-American Girls Professional Baseball League](#), played two seasons, 1951 and 1952, before relocating to Muskegon.

Demographics

Historical population

Census	Pop.	%±
1890	13,197	—
1900	18,563	40.7%
1910	25,267	36.1%
1920	36,164	43.1%
1930	45,573	26.0%
1940	43,453	−4.7%
1950	48,666	12.0%
1960	44,169	−9.2%
1970	38,931	−11.9%
1980	35,724	−8.2%
1990	53,540	49.9%
2000	53,364	−0.3%
2010	52,347	−1.9%

In 1982, at the insistence of the [Kellogg](#) Company, the city annexed Battle Creek Township, nearly doubling the city's population. Kellogg's even went so far as to threaten moving their headquarters if the annexation failed to occur.^[39]

2010 census

As of the [census](#)^[5] of 2010, there were 52,347 people, 21,118 households, and 12,898 families residing in the city. The [population density](#) was 1,228.5 inhabitants per square mile (474.3/km²). There were 24,277 housing units at an average density of 569.7 per square mile (220.0/km²). The racial makeup of the city was 71.7% [White](#), 18.2% [African American](#), 0.7% [Native American](#), 2.4% [Asian](#), 2.7% from [other races](#), and 4.3% from two or more races. [Hispanic](#) or [Latino](#) of any race were 6.7% of the population.

There were 21,118 households of which 33.6% had children under the age of 18 living with them, 37.1% were [married couples](#) living together, 18.5% had a female householder with no husband present, 5.5% had a male householder with no wife present, and 38.9% were non-families. 32.6% of all households were made up of individuals and 12.1% had someone living alone who was 65 years of age or older. The average household size was 2.41 and the average family size was 3.04.

The median age in the city was 36.3 years. 26.1% of residents were under the age of 18; 9% were between the ages of 18 and 24; 25.9% were from 25 to 44; 25.5% were from 45 to 64; and 13.4% were 65 years of age or older. The gender makeup of the city was 47.9% male and 52.1% female.

As of April 2013, Battle Creek has the fifth largest Japanese national population in the State of Michigan, 358 people.^[40]

2000 census

As of the [census](#)^[7] of 2000, there were 53,364 people, 21,348 households, and 13,363 families residing in the city. The [population density](#) was 1,246.0 per square mile (481.1/km²). There were 23,525 housing units at an average density of 549.3 per square mile (212.1/km²). The racial makeup of the city was 74.65% [White](#), 17.80% [black or African American](#), 1.94% [Asian](#), 0.77% [Native American](#), 0.01% [Pacific Islander](#), 2.11% from [other races](#), and 2.72% from two or more races. 4.64% of the population were [Hispanic](#) or [Latino](#) of any race.

There were 21,348 households out of which 32.3% had children under the age of 18 living with them, 41.9% were [married couples](#) living together, 16.1% had a female householder with no husband present, and 37.4% were non-families. 31.6% of all households were made up of individuals and 12.1% had someone living alone who was 65 years of age or older. The average household size was 2.43 and the average family size was 3.04.

In the city the population was spread out with 27.2% under the age of 18, 8.7% from 18 to 24, 29.5% from 25 to 44, 21.0% from 45 to 64, and 13.5% who were 65 years of age or older. The median age was 35 years. For every 100 females there were 91.9 males. For every 100 females age 18 and over, there were 87.2 males.

The median income for a household in the city was \$35,491, and the median income for a family was \$43,564. Males had a median income of \$36,838 versus \$26,429 for females. The [per capita income](#) for the city was \$18,424. About 10.7% of families and 14.4% of the population were below the [poverty line](#), including 17.5% of those under age 18 and 11.8% of those age 65 or over.

Government

The City of Battle Creek has a commission/manager form of government. Cities that follow this plan of government have an elected commission (or council) that appoints a professionally trained and experienced manager to administer the day-to-day operations of the city and to make

recommendations to the city commission. Battle Creek also appoints a City Attorney, who provides legal counsel to the City Manager and City Commission.

The City Commission makes all policy decisions, including review, revision and final approval of the annual budget, which is proposed annually by the City Manager. The City Manager serves as an "at-will" employee and he works under an employment contract with the commission. All other city employees, with the exception of the City Attorney's staff, are under the supervision of the City Manager.

There are five ward commissioners. Residents cast votes for a ward representative, who must live within the area they are representing, as well as for four at-large commissioners. These candidates may live anywhere in the city. All commissioners serve two-year terms and all terms begin and end at the same election. The next commission election will be fall of 2011.

Each November, the commission holds a special meeting to decide which commissioners serve as Mayor and Vice Mayor for the next year. The Mayor presides over the commission meetings and appoints commissioners and residents to special committees. He may also form special committees to explore community challenges or potential policies. The Vice Mayor stands in if the Mayor is unavailable.^[41]

Economy

Largest Employers

According to the City's 2011 Comprehensive Annual Financial Report,^[42] the largest employers in the city are:

#	Employer	# of Employees
1	Kellogg	2,500
2	Denso	2,085
3	Hart-Dole-Inouye Federal Center	1,556
4	Bronson Battle Creek	1,400
5	Battle Creek VA Medical Center	1,300
6	Michigan Air National Guard	1,127
7	Battle Creek Public Schools	1,089
8	Kellogg Community College	920
9	I I Stanley	750
10	Family Fare	700
10	Duncan Aviation	700

Education

Colleges and universities

- [Kellogg Community College](#), a 2-year college founded in 1956.
- [Robert B. Miller College](#), a 4-year institution which shares KCC's facilities

- [Western Michigan University's](#) Battle Creek Branch — The Kendall Center
- [Western Michigan University's](#) College of Aviation, located at W.K. Kellogg Airport
- [Spring Arbor University](#) Battle Creek Branch
- [Davenport University](#) Battle Creek Campus

Public school districts[\[edit\]](#)

- [Battle Creek Public Schools](#)^[43]
- [Harper Creek Community Schools](#)^[44]
- [Lakeview School District](#)
- [Pennfield School District](#)^[45]

High schools (public)

- [Battle Creek Central High School](#)^[46]
- [Harper Creek High School](#)
- Battle Creek Area Learning Center, better known as Calhoun Community High School^[47]
- [Lakeview High School](#)^[48] including Lakeview High School Library^[49] an [American Library Association](#) award recipient^[50] in 2008.
- Michigan Youth ChCalhounge Academy^[51]
- [Pennfield Senior High School](#)

High schools (private)

- [Battle Creek Academy](#)^[52]
- [Bedford Bible Church School](#)^[53]
- [Calhoun Christian School](#)^[54]
- [St. Philip Catholic Central High School](#)

Secondary schools]

- [Battle Creek Area Mathematics and Science Center](#), an accelerated secondary school that focuses primarily on math and science education.^[55]
- [Calhoun Area Career Center](#), provides career and technical education to primarily 11th and 12th grade students.^[56]

Points of interest

Art Center of Battle Creek^[58]

- Bailey Park & C.O. Brown Stadium^[59]
- [Battle Creek Sanitarium](#) (now the Hart-Dole-Inouye Federal Center)^[60]
- [Binder Park Zoo](#)
- [Fort Custer Recreation Area](#)^[61]
- Kimball House Museum^[62]
- [Historic Adventist Village](#)

- Kingman Museum and Planetarium^[63]
- [Leila Arboretum](#)
- Linear Park^[64]
- [Willard Beach And Park](#)
- Willard Library^[65]

Fort Custer Army National Guard Base^[edit]

Founded in 1917, [Camp Custer](#), as it was then known, would over the next decades serve as a training ground from World War I until the present. Parts of the base were spun off to become the Battle Creek Veteran's Hospital, [Fort Custer National Cemetery](#), [Fort Custer Recreation Area](#) and Fort Custer Industrial Park. This industrial Park contains more than 90 different companies.

The [United States Government](#) still owns the land, but it is now administered and managed by the state of Michigan. The base, which is still mostly undeveloped, wooded land takes up a sizable portion of Battle Creek's land area. The part of the base in Battle Creek that is now the industrial park measures 4.69 square miles (12.15 km²) in area, which is approximately 10.6% of the city's area. A much larger part of the base lies in [Kalamazoo County](#). The adjoining [W.K. Kellogg Airport](#) is a joint civilian-Air National Guard facility.

Transportation

Battle Creek is situated on [Interstate 94](#) (I-94) midway between Detroit and Chicago.

Railroad and Bus Lines^[edit]

See also: [Battle Creek \(Amtrak station\)](#)

The Battle Creek Amtrak Station serves Amtrak trains on the south end of the station and Greyhound and Indian Trails bus lines on the north side of the station. The station is located downtown at 104 Capital Avenue SW, Battle Creek, MI 49017.

Public Transportation

The [Battle Creek Transit](#) provides public transit services to Battle Creek area residents. Regular route bus service is provided throughout the City of Battle Creek.

Major highways

-  [I-94](#)  [BL I-94](#)  [I-194](#)  [M-37](#)  [M-66](#)  [M-89](#)  [M-96](#)

Aviation

[Kalamazoo's Kalamazoo-Battle Creek International Airport](#) serves Battle Creek. Locally, W. K. Kellogg Airport serves the general aviation needs of the community. The airport is also home to [Western Michigan University's](#) College of Aviation, Duncan Aviation, WACO Classic Aircraft

Corp. the world's only bi-plane manufacturer,^[66] and formerly, the Michigan [Air National Guard's](#) 110th Fighter Wing which flies the [A-10](#) and [O/A-10](#) aircraft.

Notable people

- [People from Battle Creek, Michigan](#)

Sister cities

Battle Creek has [sister cities](#) relationships with the following cities:

-  [Santo André, Brazil](#)
-  [Takasaki, Japan](#)

Battle Creek's official Sister City is Takasaki, Japan, a relationship that is more than 25 years old. Takasaki later established Sister City relationships with Santo Andre, Brazil; Chengde, China; Pilsen, Czech Republic and, in 2006, [Muntinlupa City](#), the Philippines. These cities take turns hosting an environmental conference each year to allow technical and administrative staff to share ideas and projects for addressing environmental concerns.

Battle Creek and Takasaki also organize junior high and high school student and teacher exchanges each summer.

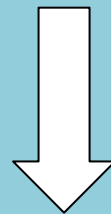
References in popular culture

When the TV show [The Beverly Hillbillies](#) was first aired in the 1960s, Kellogg's was a main sponsor, and the theme song continued longer than it does in reruns today. Jed pointed to a billboard ad of Kellogg's Corn Flakes, and the singer went on: "Now come along and visit with the Clampett family, as they learn the simple pleasures in the hills of Beverly. That includes the products of the sponsor of the week, the cereals of Kellogg's, Kellogg's of Battle Creek"^[67]



APPENDIX 3

Battle Creek Fire Activity





BattleCreekEnquirer

Three fires in two days reported in Battle Creek

Trace Christenson *11:38 a.m. EST February 27, 2015*



(Photo: Trace Christenson/The Enquirer)

142CONNECT 2TWEETLINKEDINCOMMENTEMAILMORE

A fire at Family Dollar was the last of three fires in Battle Creek Thursday and Friday. Firefighters were called to the store at 1880 W. Michigan Ave. at 8:41 a.m.

Inspector Quincy Jones said the fire started in a rear storage area but the cause remains undetermined. The storage area was damaged by fire and the entire store was damaged by smoke.

Store officials estimated the business will be closed two weeks for repairs and cleaning. The fire was the third in less than 24 hours. At 12:52 a.m. Friday firefighters were called to 118 Buckley Lane and found heavy smoke and flames from the structure.

A neighbor noticed the fire and saw lights on inside, but firefighters said no one was in the building and it appears to have been unoccupied for the last month. The fire damaged the garage, which had been converted to a living area. Damage to the building and contents was estimated at \$12,000.

One firefighter was injured in the fire when some debris fell on her and she suffered a possible concussion and some soreness in her shoulder. On Thursday a garage owned by Charles Johnson at 135 N. 32nd St., was destroyed by a fire reported at 1:02 p.m.

The two-car attached garage was engulfed in flames when firefighters arrived. Johnson said he had been gone about 45 minutes when the fire was reported.

A pick-up truck and motorcycle also were destroyed and the damage estimate was \$90,000. No injuries were reported.

Both Jones and Detective Scott Silverman of the Battle Creek Police Department were inspecting the damage Friday morning but Jones said a cause of the fire has not yet been determined.

WZZM

13 abc

A GANNETT COMPANY

Fire destroys several apartments at the Arbors

Trace Christenson,

7:38 p.m. EDT March 20, 2015



(Photo: Al Lassen/For the Enquirer)

258CONNECT [9](#)TWEET[LINKEDIN](#) [4](#)COMMENTEMAILMORE

Fronza Swift was watching television when she smelled that something was wrong.

"I was watching TV and I thought I smelled something," she said early Friday morning. "Then a neighbor called and said the building was on fire."

"Then I got my client out," she said.

Swift is a care worker for Progressive Residential Services and was staying with her client Michael Tooker, who is confined to a wheelchair.

Since January he has lived on the west end of an apartment building at The Arbors of Battle Creek at 3241 Capital Ave. S.W.

They smelled smoke because the middle portion of the 36-apartment building was a roaring fire.

Swift had Tooker in his wheelchair and was pushing him out of the ground floor apartment to safety.

"He got stuck a little, but I gave him a shove and we were out of there," Swift said.

Outside, she said, the fire was through the roof in the middle of the building.

"I got my client out but when we walked out there was just black smoke," she said. "It looked pretty scary."

Swift said she and Tooker spent the next couple of hours in her van watching firefighters battle the blaze. His wheelchair was sitting next to the vehicle.



(Photo: Al Lassen/For

the Enquirer)

Fullscreen

Battle Creek firefighters were called at 2:58 a.m., according to Battalion Chief Martin Erskine.

"When I arrived there was heavy fire from the middle of the building," Erskine said. "It was through the roof."

The firefighters who arrived made several rescues of people from the balconies, including one pregnant woman.

Erskine said no serious injuries were reported and after two searches of the building he said no one was believed still inside.

"We are getting a list from the management to make sure everyone is accounted for," Erskine said.

One firefighter was treated at the scene for a minor injury.

At least two pets also were rescued.



Firefighters were on scene during a fire at The Arbors Wednesday morning. *(Photo: Trace Christenson/The Enquirer)*

Erskine said four apartments, two on the third floor and two on the second and all in the back of the building on the north side were the most heavily damaged. A portion of the roof above those apartments collapsed.

However firefighters were able to stop the fire from spreading to apartments on either end of the building. Erskine said while some other apartments sustained some fire, smoke and water damage, much of the building was saved.

Fire Inspector Lt. Quincy Jones was at the scene early this morning waiting for firefighters to ensure all the fire was out before he began his search for the cause. No dollar estimate of damage was available early today.

Some residents were taken to the Red Cross at 14600 Beadle Lake in buses from Lifecare Ambulance and the Battle Creek Veterans Affairs Medical Center.

Erskine said 21 firefighters from the city were assisted by personnel from Leroy and Newton townships fire departments.

Battle Creek police closed a section of Capital Avenue Southwest near the fire scene.

Call Trace Christenson at 966-0685. Follow him on Twitter: @TSChristenson

BC neighborhood rocked by house explosion, fire

Updated: Sunday, January 4, 2015

[More Sharing Services](#)

BATTLE CREEK, Mich. (NEWSCHANNEL 3) - Firefighters are on the scene after an explosion and fire at a house in Battle Creek.

Video posted to our News channel 3 Face book page shows the home going up in flames.

News channel 3's Amy Hybels joins us live from the scene in the Urbandale neighborhood. It's hard to believe when you look at what happened out here this evening that no one was killed or injured.

The force of the blast blew the walls of the home apart. One wall ended up on neighbor's truck.

Fire officials say they responded to a report of an explosion and fire around 6:30 p.m. Saturday and when they arrived the house was on fire. It took them about 20 minutes to put it down. Now they're investigating the origin and the cause of the explosion and fire.

Fortunately, no one was inside the home at the time of the explosion. It's been vacant for about six weeks according to owner, Andy Askler, who says he's been trying to sell the house. A next-door neighbor told News channel 3 he thought that the house had been vacant for a year.

Neighbors say they could hear the explosion and even feel the vibration from the blast from the other end of the street. Terry Oberhauser says, "It sounded just like a cannon going off."

Laura Gould says, "We felt just more or less the bedroom walls shake." She added she felt "shock ... I couldn't believe it, so it was just strange how a house can just blow up like that."

Lt. Quincy Jones with the Battle Creek Fire Department says the investigation into what happened at 24 Lamora Avenue is ongoing. A gas investigator has been called in, but at this point they don't have enough information to say what caused this incident



APPENDIX 4



Private Ambulance Company Shuts Down in Six States

NBCNews.com December 10, 2013

Major ambulance service shuts down without notice in six states



First Med EMS, based in Wilmington, N.C., served hospitals and other medical facilities in more than 70 municipalities in Kentucky, North Carolina, Ohio, South Carolina, Virginia and West Virginia. It operated under the names TransMed, Life Ambulance and MedCorp.

By M. Alex Johnson, Staff Writer, NBC News

A private ambulance service that transported more than a half-million patients a year in six states abruptly shut down without explanation, leaving dozens of cities and towns scrambling for medical transportation options this week without a word of warning.

First Med EMS, based in Wilmington, N.C., served hospitals and other medical facilities in more than 70 municipalities in Kentucky, North Carolina, Ohio, South Carolina, Virginia and West Virginia. It operated under the names TransMed, Life Ambulance and MedCorp, boasting in publicity materials: "We take pride in our performance and the safety of our patients. We refuse to compromise on this."

First Med's website was inaccessible Tuesday, and calls to corporate offices either reached disconnected lines or weren't answered. Company workers said in Facebook posts and tweets that they were told the corporation had declared bankruptcy, but no bankruptcy documents were yet on file in U.S. Bankruptcy Court for the Eastern District of North Carolina.

[Related: Lawsuit filed against shuttered ambulance service that stranded hospitals in six states](#)

First Med was the largest EMS service in Ohio, where at least 1,500 paramedics and other medical workers were left jobless in Cleveland, Columbus, Dayton, Toledo, Cincinnati, Youngstown and numerous smaller towns.

First Med also provided services in Richmond, Norfolk and Newport News in Virginia, as well as Wilmington, N.C.

Much of First Med's business was "non-emergent" transportation — such as taking dialysis patients to their weekly treatments and shuttling nursing home patients to doctors' appointments — and officials in some cities said there should be little impact on patient treatment.

"The unfortunate thing was lack of notice," Larry Stephens, ambulance service director for Camden Clark Medical Center in Parkersburg, W.Va., [told NBC station WTAP](#). "They closed up shop on Friday, and people were scrambling to get to their appointments all weekend, plus early this week."

Many of the company's approximately 2,300 employees learned about the shutdown from colleagues. When they tried to show up for work Saturday, they found locked doors.

"I found out on Facebook and from a co-worker that I no longer had a job," Stacey Carpenter, a First Med dispatcher in Wilmington, [told NBC station WECT](#). "I am absolutely devastated. I don't know what I am going to do."

Dispatch services in several cities reported that First Med called them Friday night and Saturday to stop all requests for emergency runs. Workers who were in the middle of their shifts were told to turn around and go home.

"We didn't know what to do," Derek Griffin, an emergency medical technician in Hopewell, Va., [told NBC station WWBT of Richmond](#).

"They told us to turn our truck in, to turn our equipment in. That was it," he said. "It was done so shadily and so behind closed doors."

Medical facilities said the shutdown took them by surprise, too, and at least one county — Bertie County, N.C. — declared a state of emergency at noon Monday. The county board of commissioners said in a statement that it would pursue legal claims against First Med.



APPENDIX 5



IAFF Local 335 Study on ALS Service and Ambulance Transport

RECOMMENDATIONS FOR BATTLE CREEK FIRE DEPARTMENT ADVANCED LIFE SUPPORT PROGRAM

SUBMITTED BY IAFF LOCAL335 ALS COMMITTEE:

CHAIR: JAYE TKAC

MATTHEW BEAUCHAMP

MARK DEVRIENDT

MARK KOCH

SHAWN METHENY

ROBERT ROOD

JAYESON TKAC

Total Estimated Cost to Provide ALS Medical Transport

Estimated Personal Cost	\$ 248,000.00
Estimated Training Cost	\$ 26,000.00
Estimated Apparatus Cost	\$ 102,000.00
Estimated Equipment Cost	\$ 360,000.00
Estimated Operational Cost	\$ 32,000.00
Estimated Building & Grounds Cost	\$28,000.00

Totals	\$ 796,000.00
--------	---------------

Systems Revenues (6870 Billable Runs)	\$ 1,915,000.00
---	-----------------

Net Profit	\$ 1,119,000.00
------------	-----------------

Projected Enterprise Fund Balance after First year \$ 1,119,000.00

Personnel and Clinical Standards

The integration of ALS Transport services into the Battle Creek Fire Department will provide:

- 1 A commitment to meet and exceed expectations of clinical and professional standards and staffing requirements through innovative staffing, human relations, leadership, and clinical training;
- 2 A commitment to operate under the City's command structure and policies with the integrated approach to EMS;
- 3 A comprehensive personnel training program that not only meets but exceeds state and federal requirements;
- 4 A commitment to meet and exceed current medical protocols, policy and procedures by working closely with all EMS stakeholders to constantly improve the quality of EMS delivered;
- 5 A successful recruitment, screening, and orientation program that will attract and maintain the best personnel to serve the City of Battle Creek;

Hiring of Personnel

The Battle Creek Fire Department will fill the 9 current open positions in suppression with FF/Paramedics, hire 3 additional FF/Paramedics and hire an EMS Training Coordinator, increasing the budgeted staff by 4 positions. The minimum requirements for application would be established at FF1 & 2 and EMT-P (paramedic license).

System Design

Design objectives:

The proposed model will allow the BCFD to implement ALS response and transport services with a moderate investment in personnel and capital equipment. Through a multi-step transition, the BCFD will assume all Advanced Life Support response and patient transportation. The following is a planning template/checklist outlining the objectives that must be met in order to implement the BCFD based EMS system. Many of these objectives may be pursued and accomplished simultaneously.

- 1 The City of Battle Creek establishes an enterprise fund account through which ambulance transportation costs and revenue are coordinated. Start-up costs would be budgeted and placed in this special fund, to be replaced by ambulance transportation revenue as it becomes available;
- 1 Battle Creek Fire Department secures all necessary authorization from the Michigan Department of Community Health;
- 2 BCFD secures all necessary equipment from various vendors to provide ALS patient transport;
- 3 BCFD hires 13 Paramedics. One to serve in the capacity of EMS training Co-coordinator, nine to fill the current budgeted vacancies, and three additional FF/Paramedics;
- 4 Battle Creek City Dispatch center develops dispatch, EMS response, and transportation procedures. Quality assessment and continuing education programs are planned and implemented;
- 5 Battle Creek City continues responsibility for EMS dispatch and trains all employees in the use of EMS protocols;
- 6 Upon completion of employee training/orientation and upon final authorization from the State of Michigan BCFD assume responsibility for EMS response and patient transportation;
- 7 All future applicants to the BCFD would be required to have Firefighter 1&2 and a current paramedic license to apply for employment;
- 8 BCFD would contract with an outside agency to provide EMS billing so that the City will receive the maximum monetary benefits.

Proposed Battle Creek Fire Department Apparatus, Staffing ,and Deployment

Station	Address	Apparatus	Staffing
Station 1	195 E. Michigan Ave	Rescue 1	1 Officer 2 FF's
		Truck 1	1 Officer 1 FF
Station 2	145 N. Washington Ave	Engine 2	1 Officer 3 FF's
		Medic 2	1 Paramedic 1 EMT
Station 3	222 Cliff St.	Engine 3	1 Officer 3 FF's
Station 4	8 S. 20 th St.	Rescue 4	1 Officer 3 FF's
		Medic 4	1 Paramedic 1 EMT
Station 5	1170 W. Michigan Ave.	Engine 5	1 Officer 3 FF's
Station 6	2401 Capital Ave. SW	Engine 6	1 Officer 3 FF's
		Medic 6	1 Paramedic 1 EMT
Total			31 Personnel/ Shift

System Design

Summary of System Enhancement

As a result of EMS integration, the city will achieve the following system enhancements:

- 1 Revenue generating system in the first year of operation, after deducting the marginal cost of implementing the fire-based system.
- 2 Continue to provide Battle Creek with estimated average annual revenue in excess of \$1,915,000.00
- 3 Enhance emergency medical response and transport by deploying Three (3) advanced life support transporting vehicles dedicated solely to the City of Battle Creek.
- 4 Meet Advanced Life Support criteria of 8 minutes for 100% of addresses in the city with transport ambulance located at stations 2,4,& 6.
- 5 An integrated fire based EMS system will allow the BCFD to respond, treat, and transport patients rather than handing those patients off to another provider, promoting continuity of care while generating revenue.
- 6 The BCFD will be able to handle the ALS transport volume without the use of variable scheduling and unpredictable availability.
- 7 The Fire Chief will maintain control of fire suppression, rescue, and EMS services for the municipality.
- 8 More efficient use of tax dollars, increased productivity, and enhanced fire/EMS capabilities, through the use of cross-trained/dual role firefighters providing two essential services within one department.
- 9 Cross-trained/dual role personnel assigned to the transport units and equipped with fire suppression protective gear are available to enhance fire protection activities as necessary, including compliance with the "2 in/ 2 out" OSHA regulations for fire suppression.

Executive Summary

The Battle Creek Fire Department (BCFD) has long provided fire suppression and emergency medical fire response services to the citizens of Battle Creek. The BCFD has successfully implemented a first responder program, which, in most cases, arrives prior to the private transport unit and provides essential primary patient care. In doing so, the fire department has essentially subsidized the private ambulance company by performing the time critical first response activity, while the private ambulance company provides the revenue generating transport service. The city further subsidizes the private ambulance company on occasion by providing Fire Department emergency medical technicians to supplement the private company personnel en route to the hospital.

The City should offer those services now provided by the private transport company, thus establishing a source of revenue to the jurisdiction and ensuring that the City has sole authority over EMS system design and quality. The Committee is proposing advanced life support ambulance transport by the BCFD for the City of Battle Creek, thus continuing the fire departments tradition of superior care, which is ethically based and financially viable for the long term.

With the demonstrated commitment and extensive experience of working with City leaders, the committee believes the Battle Creek Fire Department is the best organization to help the City realize its vision of an innovative, clinically superior and fully integrated EMS system that will be viable in the long term. Therefore, the committee recommends that the Battle Creek Fire Department integrate Advanced Life Support patient transport into the realm of services they now provide. Specifically it is recommended that:

- 1 The Battle Creek Fire Department continue to operate under the city dispatch center, integrates the fire department based deployment system, and trains employees in the use of emergency medical dispatch protocols;
- 2 The Battle Creek Fire Department assumes responsibility for Advanced Life Support Response and patient transport according to the implementation process described in this proposal;
- 3 Upon implementation of transport services, the Battle Creek Fire Department contract with a third party provider for the purpose of EMS billing.

Battle Creek Fire Department Fire-Based Advanced Life Support Transporting Proposal Goal

The goal of the IAFF Local 335 proposal is to provide the citizens of Battle Creek a full service, out-of-hospital emergency care system. This system will include the provision of rapid response, treatment, and transport for the purpose of the continuity of quality patient care. Through employee teamwork and a distinctive command structure, the Battle Creek Fire Department (BCFD) based system will deliver the optimum level of EMS response and patient care, including transport. Advanced Life Support and patient transport may be added to the Fire Department for a moderate start-up cost, which will be offset by transport revenue.

The EMS mission of the department is to provide the most efficient and highest quality emergency response and care that will not only compliment, but enhance the existing fire department structure. The services described in this proposal are best characterized as a mechanism for providing appropriate levels of effective patient care while maintaining fiscal responsibility.

The Vision of this program is one of growth and adaptation, as necessary, to maintain and even enhance the quality of services delivered. This continuous improvement will facilitate safe, efficient and effective emergency response and patient care leading to positive outcomes for those requiring our service.

In brief overview, the committee proposes to expand the services currently provided in the emergency response system to include emergency medical transport at the advanced level. The transport service will be a fully integrated part of the BCFD and the regional response system. The services currently provided by the BCFD include fire suppression, hazardous materials response and mitigation, confined space rescue, and emergency medical care. The addition of transporting advanced life support is a logical step for the department and a complementary addition to the services now provided.



APPENDIX 6

Medicare tightening ALS Transport reimbursement



NewsWorks

Jan.5, 2015

Medicare requiring pre-approval on ambulance rides to combat fraud in N.J. and Pennsylvania



(Emma Lee/for NewsWorks)

In an effort to crack down on ambulance fraud, the federal government is beginning a [pilot program](#) in Pennsylvania and New Jersey to change the way Medicare reimburses rides for non-emergency medical treatment.

The only people who are supposed to qualify for a free ambulance ride to their regular dialysis or cancer treatment appointments are those who really need it: patients who are bed-ridden or have another serious medical problem.

All too often, though, relatively healthy people have been using ambulances, sometimes with the encouragement of a kickback from a transport company. And at \$400 for a round-trip, health care consultant [Marsha Simon](#) said Medicare's increasing tab has officials upset.

"We have the absurd situation at present that the cost of the ride is more than the cost of the dialysis treatment," she said. By December 15th, ambulance companies in New Jersey, Pennsylvania, and South Carolina will need to get prior authorization before transporting qualified patients who require rides on a regular basis.

Simon said the restriction is likely to cut down on improper billing. But it also may mean patients won't get the care they need. "What may look like savings under the line item called ambulance," she said, "is going to end up being greater cost on the line item called hospital."

A much better solution, she said, would have been a pilot program that included a Medicare-funded transportation option for people who may not be able to drive or are unable to afford a taxi, but don't need an ambulance. Alternative transport is available in New Jersey, but only if a patient is enrolled in Medicaid — and no such service exists in Pennsylvania.

The Philadelphia area has been one of the worst offenders for ambulance fraud in recent years, including several [high profile arrests](#). In January the government also issued a six-month [moratorium](#) on approving new operators in the region.

If the program is as effective at stamping out fraud as Simon believes, then it's possible some local companies will have to close. "There's currently 63 non-municipal ambulance providers in Philadelphia alone," said Karen Kroon, the general manager of the [American Medical Response](#) ambulance company in Philadelphia. "It seems to me there's way too many for the legitimate number of transports that may be out there."

Her company focuses on transporting patients who are critically ill, and currently is not providing any rides to people who fall under the new regulations, although they have in the past.

"It's a little bit more paperwork, but we're fully prepared," said Kroon. "We have our pre-authorization process in place, and I don't see this having much of an impact on our business at all."

That may be less true of the ambulance providers she sees dropping off patients at the dialysis center across the street from her office.

"Patients walk out the back of the ambulance," she said. "I see it every day."



APPENDIX 7

Community Para-medicine



The Dallas Morning News

Plano

Plano paramedics make house calls to head off 911 runs



[Facebook](#)[Twitter](#)[Email](#)[Comment](#)[Print](#)

1/3

Rose Baca/Staff Photographer

Josh Clouse, Community Paramedic Program

coordinator for Plano Fire-Rescue, talked recently to patient Carole Young during a house call at her apartment. The program serves patients with chronic conditions. Young was recently hospitalized for congestive heart failure.

By WENDY HUNDLEY whundley@dallasnews.com

Staff Writer

Published: 03 January 2015 09:54 PM

Updated: 03 January 2015 11:18 PM

Maybe doctors don't make house calls anymore, but Plano Fire is filling the gap.

The city's new Community Paramedic Program provides in-home health care services to residents with chronic illnesses. The pilot project focuses on helping patients manage their medical conditions so they don't have to return to the hospital or call 911 often.

"In fire prevention, we want to prevent fires," Battalion Chief Chris Biggerstaff said. "This is medical prevention. We don't want these patients to get to the critical level where they have to call 911." This type of service is a growing trend around the country.

The McKinney Fire Department's Community Healthcare Paramedicine Program started in June 2013 and focused on frequent 911 callers. Since then, the city has seen a 69 percent drop in 911 calls by this group, Emergency Medical Services Chief Jason Hockett said.

Decreasing the number of 911 calls frees up ambulances for higher-priority calls, he said. "But," Hockett said, "the biggest benefit of the program is the health of patients." Plano residents are referred to the free program by local hospitals, health care providers or social workers. They may also be identified by frequent 911 calls for recurring medical problems.

The program, which began in November, was serving 12 patients by mid-December. Carole Young, 75, considers herself lucky to be one of those patients. She suffers from congestive heart failure and diabetes. She's had to dial 911 several times.

The last time was on Nov. 18 when she began having difficulty breathing while driving her car. Plano Fire-Rescue paramedics found her unconscious next to her car. When she was ready to be discharged from Medical Center of Plano, a facilitator referred her to the newly created Community Paramedic Program.

Paramedic Josh Clouse began making house calls a couple of times a week. He's helped her organize and manage her myriad prescription pills. He's educated her about the need to reduce her sodium intake. He's conducted a safety check of her home to prevent injuries and falls.

On each visit he checks her vital signs, asks about her diet and takes readings on an electrocardiogram machine. He records information on his computer, where he has access to her medical records and can relay information to the hospital and her physician.

He takes blood samples and can read the results in two minutes. “You’re getting a little anemic,” Clouse said on a recent visit. “But your sodium, potassium and sugar [levels] look good.”

The visits make Young feel confident that her medical conditions are being monitored and managed.

“It makes me feel more comfortable about being alone,” Young said. “They can detect something before it happens.”

After 90 days without having to be rehospitalized, she will be reassessed for her need for regular visits.

Before she was referred to the Community Paramedic Program, Young had tried to find a similar home health care service but was unsuccessful. Clouse said other programs may require patients to be housebound or to meet certain financial qualifications.

“Our patients fall into the gap,” he said. Currently, Clouse is the only paramedic assigned full time to the program, and Plano Fire-Rescue is absorbing the costs.

In the future, fire departments may get reimbursement from Medicare, Medicaid and private insurance companies, said Mark Gamber, an emergency room physician at Medical Center of Plano.

He said congestive heart failure is the most expensive diagnosis for Medicare. Hospitals that readmit a patient for the same condition within 30 days may not be reimbursed.

If this program prevents rehospitalizations, “it’s not only better health care [for patients], but it helps the financial viability of hospitals,” said Gamber, who also serves as medical director for Plano Fire-Rescue.

He’s confident that community paramedicine will become commonplace. “This is the tip of the iceberg.”

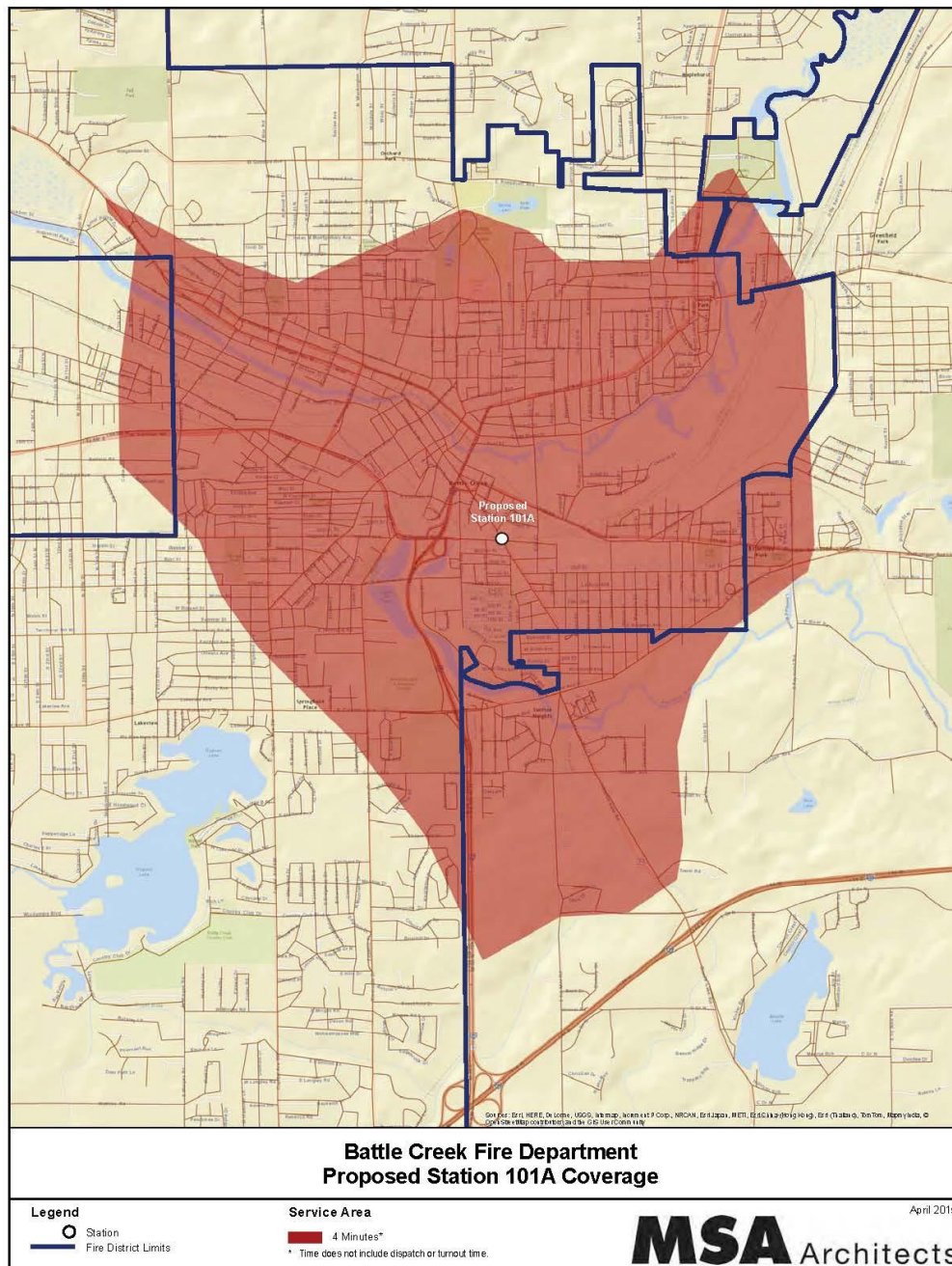
Plano Fire-Rescue officials are also sure the pilot program will become a permanent service and say it may expand to include pediatric asthma patients.

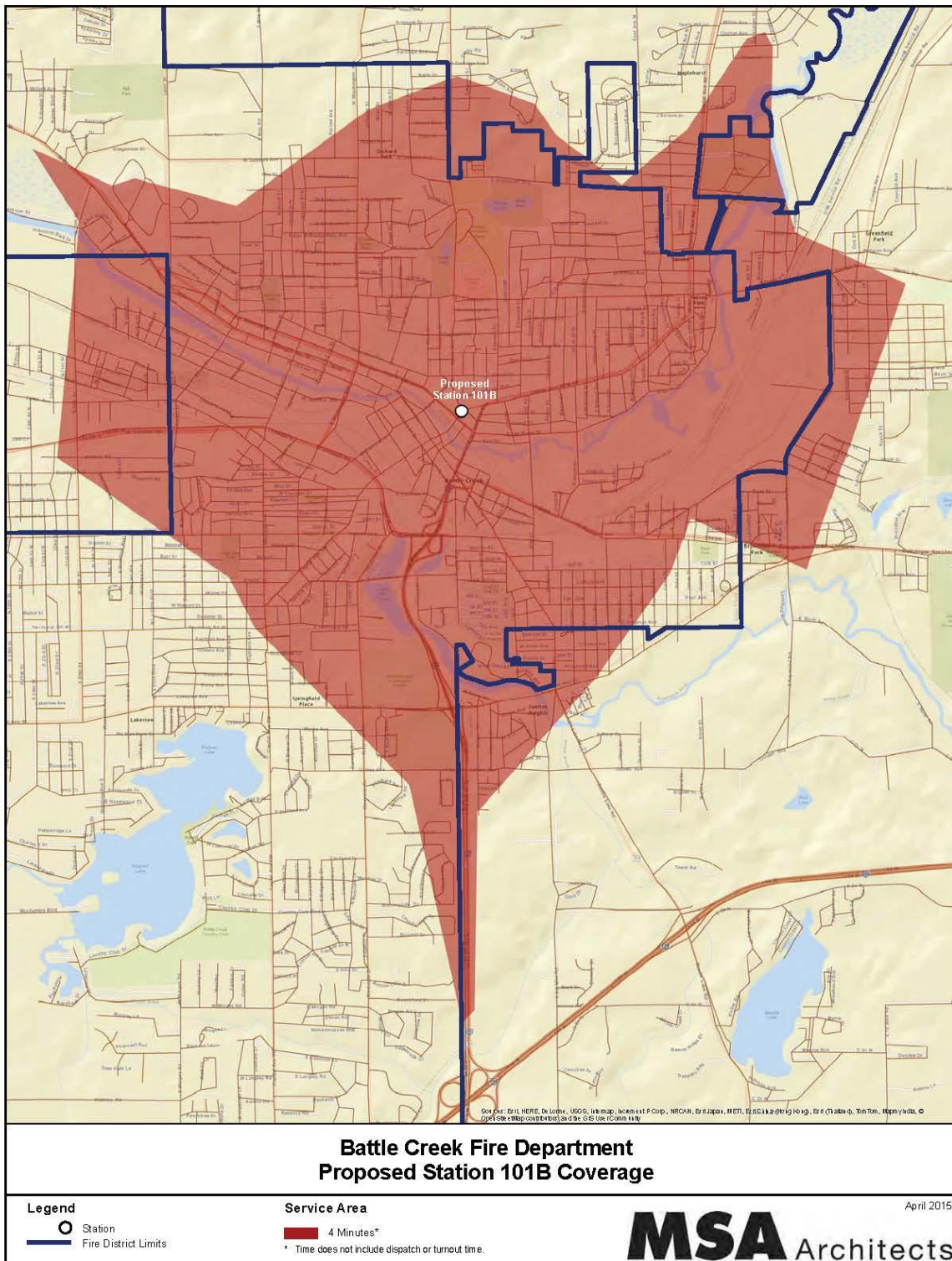
In the meantime, patients like Young find comfort in the one-on-one care the service provides. “It’s like a security blanket,” she said



APPENDIX 8

Individual Station Mapping







APPENDIX 9

NFPA Apparatus Standards



Chapter 6 Initial Attack Fire Apparatus

6.1 General. If the apparatus is to function as an initial attack fire apparatus, it shall meet the requirements of this chapter.

6.2 Fire Pump. The apparatus shall be equipped with a fire pump that meets the requirements of Chapter 16 and that has a minimum rated capacity of 250 gpm (1000 L/min).

6.3 Water Tank. Initial attack apparatus shall be equipped with a water tank(s) that meets the requirements of Chapter 18 and that has a minimum certified capacity (combined, if applicable) of 200 gal (750 L).

6.4* Equipment Storage. A minimum of 22 ft³ (0.62 m³) of enclosed weather-resistant compartmentation that meets the requirements of Section 15.1 shall be provided for the storage of equipment.

6.5* Hose Storage. Hose bed area (s), compartments, or reels that meet the requirements of Section 15.10 shall be provided to accommodate the following:

(1) Aluminum hose storage area of 10 ft³ (0.3 m³) for 2½ in. (65 mm) or larger fire hose (2) Two areas, each a minimum of 3.5 ft³ (0.1 m³), to accommodate 1½ in. (38 mm) or larger preconnected fire hose lines

6.6* Equipment Supplied by the Contractor. The contractor shall supply the equipment listed in 6.6.1 and 6.6.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

6.6.1 Ground Ladders.

6.6.1.1 A 12 ft (3.7 m) or longer combination or extension type fire department ground ladder shall be carried on the apparatus.

6.6.1.2 All fire department ground ladders on the apparatus shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 6.6.1.3.

6.6.1.3 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 6.6.1.1 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1 A or 1 AA.

6.6.2 Suction Hose or Supply Hose.

6.6.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

6.6.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

6.6.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

6.6.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

6.6.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, *Standard on Fire Hose*.

6.6.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired.

6.7* Minor Equipment.

6.7.1 General. The equipment listed in 6.7.2 and 6.7.3 shall be available on the initial attack fire apparatus before the apparatus is placed in service.

6.7.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

6.7.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

6.7.2 Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

(1) 300 ft (90 m) of 2½ in. (65 mm) or larger fire hose (2) 400 ft (120 m) of 1½ in. (38 mm), 1¾ in. (45 mm), or 2 in. (52 mm) fire hose (3) Two handline nozzles, 95 gpm (360 L/min) minimum

6.7.3* Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

(1) One 6 lb (2.7 kg) pickhead axe mounted in a bracket fastened to the apparatus (2) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus (3) Two portable hand lights mounted in brackets fastened to the apparatus (4) One approved dry chemical portable fire extinguisher with a minimum 80-B: C rating mounted in a bracket fastened to the apparatus (5) One 2½ gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus (6) One SCBA complying with NFPA 1981, *Standard on Open- Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than two, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer (7) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s) (8) One first aid kit (9) Two combination spanner wrenches mounted in a bracket(s) fastened to the apparatus (10) One hydrant wrench mounted in a bracket fastened to the apparatus (11) One double female adapter, sized to fit 2½ in. (65 mm) or larger fire hose, mounted in a bracket fastened to the apparatus (12) One double male adapter, sized to fit 2½ in. (65 mm) or larger fire hose, mounted in a bracket fastened to the apparatus (13) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus (14) Two or more wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released (15) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front (16) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band (17) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities (18) One automatic external defibrillator (AED)

6.7.3.1 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

6.7.3.2 If the apparatus does not have a 2½ in. intake with NH threads, an adapter from 2½ in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

6.7.3.3 If the supply hose carried has other than 2½ in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2½ in. NH thread male discharge and to allow the hose to connect to a 2½ in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

Chapter 8 Aerial Fire Apparatus

8.1 General.

8.1.1 If the apparatus is to function as an aerial fire apparatus, it shall meet the requirements of this chapter.

8.1.2 If the apparatus is to function as a pumper with an aerial device, it shall meet all the requirements of Chapter 5 instead of Chapter 8.

8.2 Aerial Device. The apparatus shall be equipped with an aerial ladder, elevating platform, or water tower that meets the requirements of Chapter 19.

8.3* Fire Pump. If the apparatus is equipped with a fire pump, the pump shall meet the requirements of Chapter 16.

8.3.1 Provisions shall be made to ensure that the pump operator is not in contact with the ground.

8.3.2 Signs shall be placed to warn the pump operator of electrocution hazards.

8.3.3 If the aerial fire apparatus is equipped with a fire pump that is intended to supply water to a permanently mounted waterway, the fire pump shall be capable of supplying the flow requirements of 19.6.1, 19.12.1, or 19.16.1 with a maximum intake gauge pressure of 20 psi (138 kPa).

8.4 Water Tank. If the aerial fire apparatus is equipped with a water tank, it shall meet the requirements of Chapter 18.

8.5* Equipment Storage. A minimum of 40 ft³ (1.1 m³) of enclosed weather-resistant compartmentation meeting the requirements of Section 15.1 shall be provided for the storage of equipment.

8.6 Hose Storage.

8.6.1* Any space on the aerial fire apparatus designed to carry fire hose shall meet the requirements of Section 15.10.

8.6.2 If the apparatus is equipped with a fire pump and a water tank, two areas, each a minimum of 3.5 ft³ (0.1 m³), to accommodate 1½ in. (38 mm) or larger preconnected fire hose lines shall be provided.

8.7* Ground Ladders.

8.7.1* A minimum of 115 ft (35 m) of fire department ground ladders shall be supplied and installed by the contractor.

8.7.2* As a minimum, the following types of ladders shall be provided:

- (1) One folding ladder
- (2) Two straight ladders (with folding roof hooks)
- (3) Two extension ladders

8.7.3 The contractor shall provide such brackets or compartments as are necessary to mount the equipment.

8.7.4 The fire department ground ladders shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 8.7.5 and 8.7.6.

8.7.5 Stepladders and other types of multipurpose ladders meeting ANSI A14.2, *Ladders — Portable Metal — Safety Requirements*, or ANSI A14.5, *Ladders—Portable Reinforced Plastic—Safety Requirements*, with duty ratings of Type 1A or 1AA shall be permitted to be substituted for the folding ladder required in 8.7.2(1).

8.7.6 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 8.7.2 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

8.8* Minor Equipment.

8.8.1 The equipment listed in 8.8.2 and 8.8.3 shall be available on the aerial fire apparatus before the apparatus is placed in service.

8.8.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

8.8.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

8.8.2* Aerial fire apparatus shall be equipped with at least the following equipment:

(1) Two 6 lb (2.7 kg) flathead axes mounted in brackets fastened to the apparatus (2) Three 6 lb (2.7 kg) pickhead axes mounted in brackets fastened to the apparatus (3) Four pike poles mounted in brackets fastened to the apparatus (4) Two 3 ft to 4 ft (1 m to 1.2 m) plaster hooks with D-handles mounted in brackets fastened to the apparatus (5) Two crowbars mounted in brackets fastened to the apparatus (6) Two claw tools mounted in brackets fastened to the apparatus (7) Two 12 lb (5 kg) sledgehammers mounted in brackets fastened to the apparatus (8) Four portable hand lights mounted in brackets fastened to the apparatus (9) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus (10) One 2½ gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus (11) One SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer (12) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s) (13) One first aid kit (14) Six salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m) (15) Four combination spanner wrenches mounted in brackets fastened to the apparatus (16) Two scoop shovels mounted in brackets fastened to the apparatus (17) One pair of bolt cutters, 24 in. (0.6 m) minimum, mounted in a bracket fastened to the apparatus (18) Four ladder belts meeting the requirements of NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services* (19) One 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983 (20) One 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983 (21) Two 150 ft (45 m) utility ropes having a breaking strength of at least 5000 lb (2300 kg) (22) One box of tools to include the following:

- (a) One hacksaw with three blades
- (b) One keyhole saw
- (c) One 12 in. (0.3 m) pipe wrench
- (d) One 24 in. (0.6 m) pipe wrench
- (e) One ballpeen hammer
- (f) One pair of tin snips
- (g) One pair of pliers
- (h) One pair of lineman's pliers
- (i) Assorted types and sizes of screwdrivers
- (j) Assorted adjustable wrenches
- (k) Assorted combination wrenches

(23) Two or more wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released (24) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front (25) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band (26) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities (27) One automatic external defibrillator (AED).

8.8.3 If the aerial fire apparatus is equipped with a fire pump, the requirements of 8.8.3.1 through 8.8.3.3 shall apply.

8.8.3.1 The following equipment shall be provided: (1) One double female 2½ in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the Apparatus (2) One double male 2½ in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus (3) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus (4) Two hydrant wrenches mounted in brackets fastened to the apparatus.

8.8.3.2 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

8.8.3.3 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake

threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

8.8.3.4 If the apparatus does not have a 2½ in. intake with NH threads, an adapter from 2½ in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

8.8.3.5 If the supply hose carried has other than 2½ in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2½ in. NH thread male discharge and to allow the hose to connect to a 2½ in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

8.8.4* If the aerial fire apparatus does not have a prepped waterway provided, the following equipment shall be furnished:

(1) Manual ladder pipe with 1¼ in. (32 mm), 1½ in. (35 mm), and 1½ in. (38 mm) tips or electric ladder pipe with automatic nozzle that can be attached to the aerial ladder (2) Sufficient length(s) of 3 in. (75 mm) or larger attack hose complying with the requirements of NFPA 1961, *Standard on Fire Hose*, to reach between the installed ladder pipe and the ground with at least 10 ft (3 m) of hose available on the ground with the ladder at full extension (3) One hose strap for each ladder section (4) Halyards to control the ladder pipe from ground level (for manual ladder pipe only)

8.8.4.1 A bracket for carrying the detachable ladder pipe shall be provided on the apparatus and shall be designed so that the ladder pipe clamps will not have to be readjusted to secure the pipe to the aerial ladder.

8.8.4.2 The horizontal traverse of the detachable ladder pipe shall not exceed the aerial ladder manufacturer's recommendations.

8.8.4.3 The ladder pipe shall be capable of swiveling 135 degrees from a line parallel to the ladder and down.

Chapter 9 Quint Fire Apparatus

9.1 General. If the apparatus is to function as a quint, it shall meet the requirements of this chapter.

9.2 Fire Pump.

9.2.1 The apparatus shall be equipped with a fire pump that meets the requirements of Chapter 16 and has a minimum rated capacity of 1000 gpm (4000 L/min).

9.2.2 The fire pump shall be capable of supplying the flow requirements of 19.6.1 or 19.12.1 with a maximum intake gauge pressure of 20 psi (138 kPa).

9.2.3 Provisions shall be made to ensure that the pump operator is not in contact with the ground.

9.2.4 Signs shall be placed to warn the pump operator of electrocution hazards.

9.3 Aerial Device. The apparatus shall be equipped with an aerial ladder or an elevating platform with a permanently installed waterway that meets the requirements of Chapter 19.

9.4 Water Tank. The apparatus shall be equipped with a water tank(s) that meets the requirements of Chapter 18 and that has a minimum certified capacity (combined, if applicable) of 300 gal (1100 L).

9.5* Equipment Storage. A minimum of 40 ft³ (1.1 m³) of enclosed weather-resistant compartmentation that meets the requirements of Section 15.1 shall be provided for the storage of equipment.

9.6* Hose Storage. Hose bed area(s), compartments, or reels that comply with Section 15.10 shall be provided to accommodate the following:

(1) Aluminum hose storage area of 30 ft³ (0.8 m³) for 2½ in. (65 mm) or larger fire hose (2) Two areas, each a minimum of 3.5 ft³ (0.1 m³), to accommodate 1½ in. (38 mm) or larger preconnected fire hose lines

9.7* Equipment Supplied by the Contractor. The contractor shall supply the equipment listed in 9.7.1 and 9.7.2 and shall provide and install such brackets or compartments as are necessary to mount the equipment.

9.7.1 Ground Ladders.

9.7.1.1 The quint shall carry a minimum of 85 ft (26 m) of fire department ground ladders to include at least one extension ladder, one straight ladder equipped with roof hooks, and one folding ladder.

9.7.1.2 All ground ladders carried on the apparatus shall meet the requirements of NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders*, except as permitted by 9.7.1.3 and 9.7.1.4.

9.7.1.3 Stepladders and other types of multipurpose ladders meeting ANSI A14.2, *Ladders — Portable Metal — Safety Requirements*, or ANSI A14.5, *Ladders—Portable Reinforced Plastic—Safety Requirements*, with duty ratings of Type 1A or 1AA shall be permitted to be substituted for the folding ladder required in 9.7.1.1.

9.7.1.4 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 9.7.1.1 provided they meet either ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

9.7.2 Suction Hose or Supply Hose.

9.7.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

9.7.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

9.7.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1(b) or Table 16.2.4.1(c).

9.7.2.1.3 Where supply hose is provided, it shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

9.7.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, *Standard on Fire Hose*.

9.7.2.3* The purchaser shall specify whether suction hose or supply hose is to be provided, the length and size of the hose, the type and size of the couplings, the manner in which the hose is to be carried on the apparatus, and the style of brackets desired.

9.8* Minor Equipment.

9.8.1 The equipment listed in 9.8.2 and 9.8.3 shall be available on the quint fire apparatus before the apparatus is placed in service.

9.8.1.1 Brackets or compartments shall be furnished so as to organize and mount the specified equipment.

9.8.1.2 A detailed list of who is to furnish the items and the method for organizing and mounting these items shall be supplied by the purchasing authority.

9.8.2* Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

- (1) 800 ft (240 m) of 2½ in. (65 mm) or larger fire hose, in any combination
- (2) 400 ft (120 m) of 1½ in. (38 mm), 1¾ in. (45 mm), or 2 in. (52 mm) fire hose, in any combination
- (3) One handline nozzle, 200 gpm (750 L/min) minimum
- (4) Two handline nozzles, 95 gpm (360 L/min) minimum
- (5) One playpipe with shutoff and 1 in. (25 mm), 1⅝ in. (29 mm), and 1¼ in. (32 mm) tips equipment shall be carried on the apparatus:

- (1) One 6 lb (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus
- (2) One 6 lb (2.7 kg) pickhead axe mounted in a bracket fastened to the apparatus
- (3) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
- (4) One 8 ft (2.4 m) or longer pike pole mounted in a bracket fastened to the apparatus
- (5) Two portable hand lights mounted in brackets fastened to the apparatus
- (6) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus

- (7) One 2½ gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
- (8) One SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
- (9) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s)
- (10) One spare SCBA cylinder for each SCBA carried
- (11) One first aid kit
- (12) Four combination spanner wrenches mounted in brackets fastened to the apparatus
- (13) Two hydrant wrenches mounted in brackets fastened to the apparatus
- (14) One double female 2½ in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus
- (15) One double male 2½ in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus
- (16) One rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus
- (17) Four salvage covers, each a minimum size of 12 ft × 14 ft (3.7 m × 4.3 m)
- (18) Four ladder belts meeting the requirements of NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*
- (19) One 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983
- (20) One 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983
- (21) Two or more wheel chocks, mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
- (22) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
- (23) Five fluorescent orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroreflective white band no more than 4 in. (102 mm) from the top of the cone, and an additional 4 in. (102 mm) retroreflective white band 2 in. (51 mm) below the 6 in. (152 mm) band
- (24) Five illuminated warning devices such as highway flares, unless the five fluorescent orange traffic cones have illuminating capabilities
- (25) One automatic external defibrillator (AED)

9.8.3.1 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

9.8.3.2 If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

9.8.3.3 If the apparatus does not have a 2½ in. intake with NH threads, an adapter from 2½ in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

9.8.3.4 If the supply hose carried has other than 2½ in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2½ in. NH thread male discharge and to allow the hose to connect to a 2½ in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.



APPENDIX 10

"Quints" by Robert Avsec



Fire **Rescue**.com

May 10, 2012



Product News
by Robert Avsec

The Quint: a unique and still misunderstood fire truck

Neither a jack of all trades nor a master of none, the quint will fill specific needs

By Robert Avsec

It's probably safe to say that there are many firefighters and officers who consider the quintuple combination pumper, or the quint, to be the "centaur" of fire apparatus: part engine and part truck.

Related Article:

[Back to the basics](#)

Related content sponsored by:

Since the German-based fire and rescue apparatus manufacturer, Metz Aerials, obtained the first patent for a quintuple combination pumper in 1912 — American LaFrance and Seagrave began to produce quints in the 1930s and 40s respectively — the idea of a "five-tool" piece of fire apparatus has been a controversial subject.

So where does the controversy originate?

Back in 2009, Robert Rielage, Chief of the Wyoming (Ohio) Fire-EMS department, a 78-member combination fire department bordering Cincinnati, wrote, "The modern quint ... has been described by some as a fire truck designed by a city manager who thought four firefighters could do all the work of both an engine and ladder crew from a single apparatus."

Fire chiefs who share Chief Rielage's sentiments point out that if you have only three or four people on the quint that you have the function of either a truck crew or an engine crew at a fire, but not both.

A leading proponent for the use of the quint is Neil Svetanics, the former chief of the St. Louis Fire Department. In 1987, Svetanics standardized all the apparatus in the city as quints and in 1999 ordered 34 new quints, replacing the city's fleet.

Svetanics' rationale for his unconventional thinking was really pretty simple: he needed a vehicle that would provide the most services at a time of reduced budgets.

Quint by definition

Before this discussion goes any further, let's make sure that we're talking about the same animal. Today's quint is designed to provide five tools for firefighters to carry out these tactical firefighting functions:

- Supply fire streams (pump and hoses);
- Provide initial and continuing water supply (pump, water tank, and hoses)
- Provide personnel with access to elevated areas (ground ladder complement and aerial device)
- Provide elevated master fire stream (pump, hose, and aerial device)

The National Fire Protection Association outlines the requirements for a piece of apparatus necessary to function as a quint in NFPA Standard 1901, The Standard for Automotive Fire Apparatus. Here is a summary of the quint requirements as detailed in Chapter 9 of the standard:

- Fire pump with a minimum capacity of 1,000 gallons per minute
- Water tank with a minimum capacity of 300 gallons

- Aerial ladder or elevating platform with a permanently installed waterway
- Hose storage area with a minimum of 30 cubic feet of storage area capable of accommodating 2.5 inch or larger fire hose; two hose storage areas, each with a minimum of 3.5 cubic feet or 1.5 inch or pre-connected hose lines.
- Enclosed compartments with a minimum of 40 cubic feet for equipment storage
- Complement of ground ladders containing a minimum of 85 feet of ground ladders, including at least: two extension ladders, one roof ladder and one attic ladder
- Suction hose of a minimum of 15 feet of soft suction hose or 20 feet of hard suction hose for drafting water.

Though the quint has now been around for 100 years, like all types of fire apparatus it has evolved along with new technologies. Today's quints are in many ways smaller, lighter and more agile than their predecessors. This is due to many influences, such as diesel engines, single-stage pumps, all-wheel steering, improved hydraulic systems (aerial device) and improved braking systems.

Yesterday's large, tandem-axle quints, are now more maneuverable on the road and fireground because of shorter wheelbases made possible by eliminating the second axle.

What it can do

So why would a department's leadership consider adding a quint to their department's capabilities? There are many needs that a quint can address.

Staff shortages. Rather than under-staffing both a truck and an engine with a crew of less than four personnel — the optimal number for safe, efficient and effective firefighting operations — staff a quint with a four-person crew.

- Funding cuts. The cost of a quint is less than the combined cost of an engine and truck. A quint has the tactical capabilities of both apparatus available, but through the purchase of one vehicle. (Point of emphasis: The tactical capabilities are available, but even with a four-person complement of staffing, the quint and its crew can perform either engine company or truck company functions, but not simultaneously).
- Need for some aerial capabilities. The quint with a 75-foot elevating device is the most popular model in the United States today because

its reach can meet the operational needs for a wide variety of departments.

- Need for a smaller vehicle with an elevated master streams. Older cities and towns have narrow streets with tight turning radiuses; newer cities and suburban areas are experiencing growth of the neo-classic community, that is, new construction that seeks to emulate the most positive features of older cities and towns. Quints come in a variety of sizes and configurations; all-wheel steering and other mechanical innovations provide more maneuverability for today's quints as well. For example, by positioning a quint on Side C of a structure with a narrow alley, the incident commander would have both engine and truck tactical capabilities available in that area.
- The need for lighter vehicles. Once again, the variety of sizes and configurations and weight can provide fire service leaders with an apparatus option for areas with infrastructural constraints, such as old bridges. Quints can also reduce the overall number of apparatus necessary to cross residential bridges or traverse long access roads to reach more remote homes and property.

About the author

Battalion Chief Robert Avsec (Ret.) served with the Chesterfield (Va.) Fire & EMS Department for 26 years. He was an active instructor for fire, EMS, and hazardous materials courses at the local, state, and federal levels, which included more than 10 years with the National Fire Academy. Chief Avsec earned his bachelor of science degree from the University of Cincinnati and his master of science degree in executive fire service leadership from Grand Canyon University. He is a 2001 graduate of the National Fire Academy's Executive Fire Officer Program. Since his retirement in 2007, he has continued to be a life-long learner working in both the private and public sectors to further develop his "management sciences mechanic" credentials. He makes his home near Charleston, W.Va. Contact Robert at Robert.Avsec@FireRescue1.com



APPENDIX 11

Battle Creek Fire Apparatus



Below are a few photos representative of the Battle Creek Fleet



First Responder EMS Vehicle



BCFD Engine 8



BCFD Engine 5



BCFD Quint , Actually called "Engine" to designate Local 335 Crew size





Serviceable but aging apparatus



APPENDIX 12



1. Command Structure Changing
2. National Fire Academy



BattleCreekEnquirer

Command structure changing in B.C. Fire Department

Trace Christenson, 4:54 p.m. EDT April 21, 2015

The command structure of the Battle Creek Fire Department is changing in May. Chief Dave Schmaltz said Tuesday he is assigning a battalion chief to each of the three shifts rather than having two, 40-hours-per-week administrative positions.

"From the internal operations it will give the crews a specific commander," Schmaltz said. "It will be someone they can go to and will give better accountability. I think it will be more efficient and will make us better.

"I think we will be more responsive. We will have a supervisor here all the time and at night crews won't have to wait for me or (another battalion chief) to come in. We will have senior leadership on the scene quicker than we have now.

"A fire doubles in size every 30 seconds, and the quicker we can get somebody there to start to formulate our incident plan and moving the chess pieces where we want them to be I think will resonate in better service."

Former Chief Larry Hausman moved away from assigning battalion chiefs to each shift about 10 years ago.

"It was not working for me, so we decided to make the change back," Schmaltz said.

After the retirement recently of one battalion chief, three new battalion chiefs will be promoted next week and assigned to specific shifts beginning May 3. They will work 24 hours on and 48 hours off for a total of 48 hours a week. A fourth battalion chief, Martin Erskine, will cover one 24-hour shift each week and will be assigned other duties, including overseeing training, during his 48-hour work week.

A promotion ceremony for the new battalion chiefs will be held at 6:30 p.m. on May 5 at City Hall before a meeting of the City Commission.

On Tuesday the city commission was expected to approve a revision in the labor agreement placing the salary for each of the new battalion chiefs at \$72,668 and for Erskine at \$83,580.

The change of battalion chiefs is one of several moves made by Schmaltz since he was hired as chief in February 2014.

In June he assigned firefighters to the main station at 195 E. Michigan Ave. rather than using the building just for administration.

Because many structure fires are in the central section of the city, Schmaltz said dispatching firefighters from Station 1 relieves some pressure on nearby stations on Cliff Street and North Washington Avenue.

"What it is doing is getting people there a little bit quicker," he said.

A new fire engine, at a cost of \$425,000, will be delivered in the fall and two more engines are being refurbished. The city has taken over firefighting duties at W.K. Kellogg Airport after the Air National Guard ended their firefighting operations.

He said new coats and other turnout gear are being purchased gradually for firefighters, the department is working with the police department on calls involving methamphetamine and bomb threats, hazardous materials training is continuing and he is discussing mutual-aid agreements with surrounding fire departments.

Schmaltz said the department will have 83 employees once replacements are hired for the three new battalion chiefs.

Call Trace Christenson at 966-0685. Follow him on Twitter: @TSChristenson



U.S. Fire Administration

Working for a fire-safe America

[Home](#) / [Training & Professional Development](#) / [National Fire Academy](#) / [Admissions & student information](#) / **How to apply**

- [National Fire Academy](#)
- [Coffee Break Training](#)
- [Professional Development](#)
- [Type 3 Incident Management Teams](#)
- [Other Training Resources](#)

How to apply for National Fire Academy courses

Thank you for your interest in training with us! We look forward to receiving your application and assisting you through the process. For help completing your application, contact our Admissions Office, Monday – Friday between 8:30 a.m. – 5 p.m., at 800-238-3358, ext. 1035 or by email at netcadmissions@fema.dhs.gov.

Ready to enroll in a free National Fire Academy (NFA) course? Follow these steps to apply for admission:

- **Understand course requirements.** Many courses have specific selection criteria or prerequisites; be sure to review the Course Description page for detailed instructions. [Search for courses](#).
- **Request a Student Identification Number (SID).** You need an SID to apply for NFA courses. [Register for a FEMA SID](#).
- **Complete the application.** [Download the correct application below](#) for the type of course you plan to take. Refer to “[Eight Tips for Completing a Successful NFA Application](#)” PDF 332 KB for additional information.
- **Use the correct [course code](#)** on your application.
- **Complete ALL fields on the application.** Your application will be returned if it is incomplete. Use the February 2012 version or later of the General Admission Application.
- **Submit your application** during the designated timeframe. Your application will be returned if it is postmarked outside of the designated application period.

Application deadlines

Semester date	Application period
Oct. 1, 2015 to March 31, 2016	Apr. 15, 2015 to June 15, 2015
Apr. 1, 2015 to Sept. 30, 2015	Oct. 15, 2014 to Dec. 15, 2014

Send your application

On-campus courses and non-U.S. citizen applicants (mail or fax)

National Emergency Training Center Admissions Office 16825 South Seton Avenue
Emmitsburg, MD 21727-8998 Fax 301-447-1441

Off-campus and online courses

Follow application instructions provided on the Course Description page in the [NFA catalog](#).

Application form downloads:

Form	Use this application if your course code begins with the following letters:
FEMA Form 119-25-1, General Admissions Application formerly FEMA Form 75-5 PDF 337 KB	C, P, R or T.

Form

Use this application if your course code begins with the following letters:

[FEMA Form 119-25-2, General Admissions Short Form Application](#)

formerly FEMA Form 75-5a PDF 234 KB

FEMA Form 119-25-2 is also used for Q133, O134 and any conferences held at the NFA, such as the Executive Fire Officer Graduate Symposium and National Professional Development Symposium.

F, N, O, W or Y.

Application basics

If your application is not accepted for the first semester you must reapply for second semester courses. Applications are not carried over.

You may apply for more than one course per semester, but you must submit a separate application for each course.

Application notifications

Our Admissions Office will notify you about the status of your application via email no later than 60 days after the close of the application period. Information will not be available before that time.

Please add NETC-AdmissNotifications@fema.dhs.gov to your “safe senders” list to ensure you receive our emails. This email address is used only for sending notifications; do not reply to this email address. If you did not provide an email address on your application, your notification will be sent through U.S. Mail.

Applying for course vacancies

Your application must be received at least six weeks before the course start date to be considered. Vacancies within six weeks of the start date of the course are filled only from the established wait list, so it is beneficial for you to apply early in the application period.

Requesting a Student Identification Number

If you are interested in applying for a NFA course, you need to register for a FEMA Student Identification Number (SID). **Applications for NFA courses that do not include a SID will not be processed.**

To obtain a SID

1. Register at <https://cdp.dhs.gov/femasid>
2. Select "Need a FEMA SID?" on the right side of the screen.
3. Follow the instructions to create your account.
4. You will receive an email with your SID. Save this number in a secure location.

Understanding course codes

Every NFA course has a course code as part of the overall reference number. As you scan the catalog, the course code can help you more easily identify the delivery method for your program of interest. You can quickly scan for programs that fit your preferred delivery option. Be sure to include the correct course code when you submit your application for an NFA course.

Example: If you are interested in course number R0214: Forensic Evidence Collection, the letter "R" in the reference number tells you the delivery method. As you consult the course code list below, you will see that a course with the letter "R" is either a 10-day or six-day course offered on-campus.

The Course Description page of the catalog provides specifics on the delivery type and duration along with information such as course objectives, selection criteria, prerequisites and continuing education units.

Course code	Delivery method
-------------	-----------------

C	Online-mediated delivery
---	--------------------------

F	Two-day off-campus NFA-sponsored delivery
---	---

N	10-day and six-day off-campus NFA-sponsored delivery
O	State- and local partner-sponsored training system delivery
P	Pilot delivery
Q	Self-study course
R	10-day and six-day on-campus delivery
W	Two-day on-campus delivery
Y	NFA-approved state-developed course delivery

Application process for a non-U.S. Citizen

The NFA offers a limited number of opportunities for non-U.S. citizens to attend courses. Applicants must pay their own transportation, lodging and meal costs. Students must be fluent in spoken and written English; language translation is not offered on campus. Download the appropriate application and submit it to the on-campus address.

If a course has vacancies after U.S. applicants have been placed, non-U.S. citizen applicants will be considered. Applications are accepted from non-U.S. citizens for courses and conferences anytime during the year but must be received at least 60 days prior to the course/conference start date. Non-U.S. citizens will be notified about the status of their application no less than two weeks before the start date of their requested course. Placement for a requested course offering date cannot be guaranteed.



APPENDIX 13

Reducing All segments of Response time



Reducing Response Times

Now more than ever, fire departments are being held accountable for their response time performance and effectiveness. Can your fire department answer the following questions accurately?

1. How fast do your dispatchers answer and process emergency calls?
2. What safeguards or job aides are in place to help dispatchers send the most appropriate units?
3. How long does it take for firefighters to react and respond to an emergency incident?
4. Are apparatus properly equipped for an efficient and safe response?

Our industry constantly attempts to improve response time, but rarely do we look at all aspects of the equation. Technology can play an important role in improving response times.

Remember that total response time is made up of three distinct components:

1. Dispatch time: Time elapsed from when a call is received at the 9-1-1 center until units are notified.

2. Turnout time: Time elapsed from when units are notified until they are responding.
3. Travel time: Time elapsed from when units respond until they arrive on the incident scene.

Most fire departments have a habit of focusing solely on improving their travel time, because it's traditionally accepted that little can be done to improve the other two components. Firefighters falsely believe that improving response time is made easy by driving faster. This solution rarely has a positive impact; in fact, it can lead to disastrous outcomes.

But using technology as an alternative to improve response times can change all that. Let's take a close look at each of the three components that make up response time.

Dispatch Time

One of the most critical areas in which to decrease response times comes before firefighters ever realize there's an emergency. When dispatchers receive a call for an emergency, it's critical that they identify the nature of the incident and be able to dispatch the most appropriate resources. It isn't uncommon to see technical rescue and hazmat situations downplayed during initial dispatch because dispatchers aren't comfortable with the incident type.

Computer-aided dispatch (CAD) and response interrogation software can help dispatchers recognize those rare, high-risk incidents and send the correct resources the first time. Sending the correct type and amount of resources initially is an excellent example of using technology to be more effective.

Additional technological improvements at the dispatch center can further help improve our performance. Can you imagine a dispatcher who always speaks at the same rate, tone and volume? Today, that is possible with computer-generated voice technology. By establishing a pre-recorded audio database, fire departments can ensure the correct pronunciation of all street names in a response jurisdiction. Even the format of a radio dispatch can be customized based on the incident type, geographic location or other

variables. Although the use of “robot voices” for dispatching may sound unappealing or unnatural, it eliminates common errors that can have disastrous consequences.

The use of this technology can shave seconds off the dispatch time. In addition to this tangible benefit, dispatchers are able to handle higher call volume since the radio dispatch becomes “hands free.” The process is simple: A dispatcher processes a call for service, inputs all of the information required into a CAD system and simply presses a button to initiate the dispatch process. Since the “voice” is transmitting the information to emergency response units, the human dispatcher is free to gather additional information from the caller or to perform other duties.

Turnout Time

It’s impossible to improve things that aren’t measured and communicated. If we desire quick responses, we need to explore other ways to help our firefighters respond quicker. Taking an idea from the sports arena, why not place a clock on the wall to indicate how many seconds are left until an established goal is met? Firefighters are more likely to improve performance when they can see, in real time, how they’re doing.

In Photo 1, a simple countdown clock is tied to the fire station alerting system. Once an alert is received, the same circuit that opens doors and turns on lights initiates a countdown from 60 to 0 seconds on this clock. The clock should be mounted in a conspicuous location in the apparatus bay. When only 10 seconds remain, a chime is activated on the clock to remind companies to quickly place themselves “responding” with the dispatch center. We have installed these clocks in two stations as prototypes to see if results improve enough to expand the practice to the other five fire stations. Anecdotal evidence demonstrates that the visibility of this device causes positive behavioral change (i.e., quicker turnout time).

Travel Time

Installing computers in fire apparatus is more common today than it has ever been. Departments have a wide variety of options, from adapting laptops to fit in the cab to purchasing customized, in-vehicle computers. Regardless of the hardware chosen, departments should consider using these computers for apparatus status changes.

Using mobile dispatch software, firefighters can be responsible for changing their statuses, thus making them accountable for their performance. This frees up the airwaves for additional information that companies may receive while responding.

Computers with touch-screens or easy-access buttons are the best for shaving seconds off of travel times. It will also be important for departments to closely examine the software that will be used to make sure it is “friendly” with a touch-screen environment. Some software programs use icons that are too small and detailed for any measure of accuracy on a touch-screen.

In-cab computers can also contain automatic vehicle location (AVL) devices to track fire department apparatus in real time using GPS. This can provide valuable information and allow dispatchers to notify units that are closest to a received call for an emergency, thus reducing travel times.

Embrace Change ... But Use Caution

These technologies can all have a positive impact on improving total response time. Their cost varies—from several hundred dollars for an electronic clock to hundreds of thousands of dollars for automated voice dispatching and mobile computers—but in the grand scheme of customer service, it may be well worth the investment for the improved outcome.

Note: These solutions for public safety problems should **ONLY** be implemented when they improve and simplify operations—not complicate them. Some equipment vendors have a poor understanding of the environment and culture of the fire service, leading them to think their solutions are more user-friendly than they really are. Be sure to explore what solutions other fire departments have implemented and the lessons they learned to avoid repeating mistakes. Today’s economic conditions demand that we work smarter and are mindful of our budgetary footprint for complex projects. Ideally, your investment in technological solutions should demonstrate to your taxpayers that your department is working harder for their tax dollars.

The bottom line: Technological improvements for our business have only just begun. Embrace the change and look for ways to keep your fire department on the cutting edge of improvement.

Comment Now: [Post Your Thoughts & Comments on This Story](#)



JAKE RHOADES

Jake Rhoades, MS, EFO, CFO, CMO, CTO, MIFireE, is the fire chief for the Edmond (Okla.) Fire Department and a 21-year veteran of the fire service. Rhoades holds a master's degree in executive fire service leadership. He serves as an elected member on the board of directors for the IAFC Safety, Health and Survival Section and as a principle member of the NFPA technical committee for firefighter qualifications. He is an adjunct instructor for Columbia Southern University. [Read Full Bio](#)



TOM JENKINS

Tom Jenkins, MS, EFO, CFO, CMO, MIFireE, is the fire chief of the Rogers (Ark.) Fire Department and a 14-year member of the fire service. He has a bachelor's degree in fire protection and safety engineering from Oklahoma State University and a master's degree in public administration from the University of Oklahoma. He also serves as an adjunct professor for Oklahoma State University and Northwest Arkansas Community College. [Read Full Bio](#)



APPENDIX 14

New Mission at the W.K. Kellogg Airport



Lansing State Journal

A GANNETT COMPANY

Battle Creek takes control of Air Guard fire station

Trace Christenson 10:56 p.m. EDT October 4, 2014



Battle Creek firefighter Ed Marshall prepares to drive a crash truck at the Air National Guard Base. (Photo: Trace Christenson/The Enquirer)

CONNECT [1](#) [TWEET](#) [LINKEDIN](#) COMMENT EMAIL MORE

Battle Creek firefighter Ed Marshall is adjusting to different alarm tones and dusting his new sleeping quarters and Lt. Richard Teinert is learning all about airplanes. On Thursday both were in new surroundings for the second day as the Battle Creek Fire Department assumed duties at the fire station on the Air National Guard Base at W.K. Kellogg Airport.

The city took control of firefighting responsibility at the base and for the rest of the airport on Wednesday. The National Guard stopped funding a fire station because the base no longer has a flying wing.

The city has been preparing for weeks, training 25 city firefighters and securing agreements from the military to use the Air Guard fire station and crash trucks and preparing to answer any emergency call on both the military and civilian sides of the airport.

“This is one of the busiest airports in Michigan, typically third or fourth,” said Miles Weaver, the airport’s operations manager. “We don’t have commercial traffic but we felt it was important to Western Michigan University and Duncan Aviation and the FAA and Kellogg Co. to maintain the fire department because we are so busy. For the airport and the firefighters and the city staff it has been a team effort.”

“It has been a challenge to work with the federal government and the locals, crossing civilian with the military,” said Battle Creek Fire Chief Dave Schmaltz. “The equipment was huge because you don’t just go down to the local Ford dealership and pick up one of these, so we worked hard to get the vehicles. And from my standpoint it was the training, because we didn’t have the people who had the certification necessary to be out here.”

Schmaltz said firefighters completed a 40-hour training course and have spent hours driving the airport, learning the area and studying how to combat any aircraft emergencies at the busy airfield.

Schmaltz said the Federal Aviation Administration tested the response time this week and firefighters beat the three-minute limit of reaching anywhere on the airport and pumping water with ease.

“Our first truck was there in 2:06 and the second at 2:09,” Schmaltz said. “They crushed it. They did outstanding.”

Teinert and Marshall said firefighters assigned to the base have to learn operations of different engines, how to talk to the control tower and how to attack fires in airplanes.

“The way we fight fire is totally different,” Teinert said. “In a structure fire you go interior but here we are bringing rain with foam.” He said firefighters call it “surround and drown,” flooding the fire with water and foam directed from inside the crash trucks.

Firefighters have to be aware of radar systems and armaments on planes, both of which can be fatal to firefighters, and of fuel that can easily accelerate the fire. Even some of the planes flown by students at Western Michigan University School of Aviation have rocket-powered parachute systems that could be a danger to firefighters in an emergency.

“You have to stay out of the way so you don’t get yourself shot,” Teinert said. He said firefighters have learned to use a piercing nozzle that allows firefighters to drill a hole in the body of the plane and flood the interior before they gain entrance. They are learning how to use foam and dry chemicals, both different for firefighters who have spent careers battling house fires with water.

“It’s a learning experience,” Teinert said. “We have been training for a month and we still don’t feel like we know anything yet.”

“It is not as easy as just ‘you two go out there and staff the airport,’” Schmaltz said. “We are learning what works and what doesn’t work. The call load may be a little lower, but the education has doubled.”

The base fire department has about 50 calls a year, according to Air Guard Fire Chief Senior Master Sgt. Rolando Garza. He will remain at the department, assisting the city firefighters and training members of the National Guard on drill weekends.

Garza said several civilian state employees of the base fire department took other jobs when the guard stopped funding the department, but four were laid off.

Several with seniority bumped firefighters at a base in Alpena, including Teinert’s son, Corey, his father said.

Garza said Battle Creek was one of five guard bases across the country that closed fire departments because they lost flying missions.

“We are all very sympathetic to the people who lost their jobs,” Schmaltz said. “We didn’t want that for anyone. Everyone has empathy for the people who did lose their jobs. But the coverage still needed to be there for the city and we stepped up.”

Both Teinert and Marshall wanted the assignment. Teinert’s father was fire chief at the base in the 1960s and 1970s and both said after long careers they were looking for new challenges.

“We were assigned to Rescue 4, which is the busiest truck in the city,” Teinert said. “So it has slowed down the pace, but it’s something different



APPENDIX 15

Public Safety Department Split into Fire and Police



Lenconnect.Com

Raisin Township separates police and fire departments

By David Frownfelder

Daily Telegram Staff Writer

Posted Jan. 6, 2015 @ 2:00 pm

RAISIN TWP.

On a 5-1 vote Monday, the Raisin Township Board abolished the public safety department.

The board then appointed Kevin Grayer as police chief and Eddie Mathis as fire chief. The votes to appoint the pair were unanimous.

Trustee Tom Hawkins was absent, and Supervisor Jay Cavanaugh cast the lone “no” vote on abolishing the public safety department. Cavanaugh joined the rest of the board in unanimously approving the appointments of Grayer and Mathis.

The board also unanimously approved the motion to have Jake Warner continue as assistant fire chief and the promotion of township police officer Randy Escott to sergeant and second in command at the police department.

Trustee Larry Crittenden made the motion to abolish the public safety department. When asked by Cavanaugh why he did so, Crittenden said he had simply changed his mind about the position.

“We no longer have a public safety director. If we eliminate the department of public safety, we will have two separate departments, a police department and a fire department, and that is the direction I want the township to go,” Crittenden said.

When Cavanaugh asked if the board needed to specify the duties and responsibilities of departments’ heads, township attorney David Lacasse said that was not necessary. He said the board can create a position without having a job description, especially in this case, as the board understands what the positions will be. In addition, the board had already eliminated the public safety director position at the Dec. 29 special meeting, and had thus eliminated the department.

“The only change to the structure of the fire department and the police department that was made was to create a (public safety) director position. The police department and the fire department are maintained as completely separate operations,” Lacasse said. “You’ve already voted to abolish the public safety director position. The operations are going to be separate.”

Grayer and Mathis both accepted their new positions. Grayer said he was honored that the board took this action and also promoted Escott. Mathis, who is continuing his certification training, added his thanks.

“I look forward to working with the board, and I have some ideas on how I can be a better advocate,” he said.

Mathis will continue his full-time firefighting position with the Adrian Fire Department while holding the part-time position in Raisin Township. Warner will also be part time. Monday’s actions end a period of activity that started when public safety director Scott Lambka resigned in September with the recommendation that the position be eliminated and the police and fire departments become separate units again. Lambka had been director since March 2013, when Richard Renard resigned as fire chief and the board decided to combine the two departments under one director.



APPENDIX 16

Michigan Township beefing Augmenting Fire Prevention



SHELBY TOWNSHIP ‘We fight fires now with codes’

*Fire marshal and new deputy fire marshal position to be
filled following retirement*

By Sarah Wojcik March 4, 2015

swojcik@candgnews.com



Incoming Fire Marshal Steve Henion, left, and retiring Fire Marshal Eddie Vojtush, right, stand in front of a fire engine at the Shelby Township Fire Department headquarters Feb. 25. (Photo by Sean Work)

SHELBY TOWNSHIP — Fire prevention is something most people probably don't think about when they imagine the Shelby Township Fire Department. But the inspection division goes a long way in ensuring fire safety and fighting fires before they happen. With

longtime fire marshal Eddie Vojtush's retirement Feb. 26, fire inspectors Steve Henion and Duane Staten will rise to the ranks of fire marshal and deputy fire marshal, respectively. Deputy fire marshal is a new position.

Vojtush started at the Shelby Township Fire Department on April 2, 1990, at the age of 32 as a firefighter after an unfulfilling career working with phones — he said he'd rather help somebody in their time of need than fix static on a phone.

“When I was a kid, I wanted to be a firefighter and I wanted to be a baseball player,” he said. “I got to play college baseball, but once that ended, I took a full-time job doing something completely different, although (firefighting) was always in the back of my mind.”

Over the span of his career, he said codes have become much more strict. There are now more materials in the home that burn hotter than just cotton, wool and wood, and more lightweight construction leads to easier roof collapses. “We fight fires now with codes,” Vojtush said.

The township also almost doubled in size, adding many commercial facilities that require regular fire inspections and an elderly population that requires more medical runs, he said. Before, he said station No. 3 would occasionally close if it was understaffed, and station No. 4 wasn't even open yet.

“Now, ambulances are basically rolling emergency rooms that provide drugs and doing anything they can do in an emergency room,” he said. “Back in the '70s and '80s, they were just applying oxygen, and even in the eight years I've been off the trucks, they do so much more than they did.”

The new deputy marshal position has been needed since it was abolished in 2005, Vojtush said. He said it would free up Henion to

spend more time doing plan review, emergency management and working with the township's Building Department to make sure buildings are up to code before they are occupied.

"We've found in training our new inspectors that it's not just learning the code, but how to apply it," Vojtush said. "We take them out and show them our way to get compliance because (business owners) don't always want to hear us tell them they need to spend money on this. The inspection division will remain comprised of four people; now, there will be two inspectors instead of three, as well as the fire marshal and deputy fire marshal.

"I've loved my experience here. What a great community to work for, and I'm not just saying that," Vojtush said. "It's an honor and a privilege to work here in Shelby and for the residents here." Henion has been a fire inspector for 10 years; before that, he was a firefighter paramedic with the township for eight years.

"I'm looking forward to the new challenge of becoming a marshal," Henion said. "There's a lot more to the job, so I'm excited. More plan review, being able to actually work with the guys to implement different things — it's a very encouraging time for me."

He said Vojtush and the two fire marshals before him set him up for success — that he learned from a lot of good people and had the opportunity to go to school for plan review.

Vojtush said he would miss the people the most and likened the Fire Department's sense of camaraderie to a sports team. "Not being part of that team is what I'm going to miss the most, but I'm joining another team of retirees, so I'll enjoy that part, too," he said



APPENDIX 17

Mutual Aid at work for massive pile-up on I-94



FATAL I-94 PILE-UP IN WEST MICHIGAN

[Follow on Twitter](#)

on January 11, 2015 at 5:00 AM, updated January 11, 2015 at 7:19 AMon January 11, 2015 at 5:00 AM, updated January 11, 2015 at 7:19 AM

[Update: Highway reopens Sunday morning](#)

GALESBURG, MI -- Hundreds of motorists were stranded, dozens were injured, and a Canadian truck driver was killed in a [chain-collision crash](#) on icy I-94 Friday morning that drew national attention and has had cleanup crews working around the clock. The massive pileup started at about 9:30 a.m. Jan. 9 in white-out conditions near mile marker 90; police shut down I-94 in both directions between Sprinkle Road (Exit 80) and Climax (Exit 92). First Lt. James Coleman with the Michigan State Police Coldwater Post said [Friday's pile-up on I-94](#) was a wreck most police officers see only once in their careers.

"I've been on I-94 my whole career," said Coleman, a 22-year veteran. "Most guys won't see this." You saw the scene, everybody saw it on television —193 vehicles. We've made great progress; it's phenomenal how everybody has come together."

Fireworks go off following wreck on I-94

More than two hours after a wreck involving nearly 100 vehicles occurred on I-94 near Galesburg, fireworks began exploding into the air from a semi that was carrying the explosives as cargo.

The westbound lanes were reopened just before midnight Saturday, while eastbound lanes were opened some hours later. All lanes are now clear for travel.

It was in part the dramatic explosion of an entire semi load of fireworks -- all captured on video -- that garnered coverage by national news outlets. Two firefighters and a wrecker driver were injured in that incident, which occurred as emergency workers were attempting to extinguish fires in other vehicles involved in the pileup. The fireworks, consumer grade explosives bound for a Lansing distributor, eventually burned themselves out.

Early on, residents within a three-mile radius of the crash were asked to evacuate their homes because of hazardous materials at the scene, but that order was lifted within a few hours.

The American Red Cross set up a shelter and called for blood donations, stranded motorists were shuttled out of the cold and by Saturday afternoon, all but three of the 23 people injured in the crash has been released from area hospitals. Those that remained were listed in good condition.

But mop-up of the scene took longer than expected.

Cold and weary, tow-truck drivers worked through Friday night and into Saturday to remove the scattered cars and trucks, 193 in all.

Their efforts were stalled by a single charred tanker full of formic acid that continued to blocked

all eastbound lanes.

The semi could not be moved until the acid it was hauling -- the stuff found in nature in ant venom -- could be drained off into another tanker. Temperatures in the low teens Saturday helped stabilize the acid, but work stopped when a pump froze Saturday afternoon.

First Lt. Coleman said that until the material could be drained, the Michigan Department of Transportation and the Michigan Department of Environmental Quality could not assess the road's safety for travel.

The agencies that assisted at the scene included the Kalamazoo County Sheriff's Office, Michigan State Police, Kalamazoo Department of Public Safety, fire departments from Galesburg-Charlton, Comstock, Climax, Richland, Battle Creek, the Veteran's Center in Battle Creek, Bedford Township, Kalamazoo Township, Eastwood, Pavillion Township, Leroy, Marshall, and Oshtemo; Pride Care Ambulance, Life EMS. Life Care EMS Battle Creek VA EMS, Kalamazoo County Medical Control Authority and West Michigan Aircare, Western Michigan University School of Medicine, and the Kalamazoo County Medical Examiner.

Attempts to contact the family of the truck driver killed were not immediately successful.

A reporter at the Montreal Gazette told the Kalamazoo Gazette the family of Jean Larocque, 57, of St.-Chrysostome, Quebec, declined comment. No obituary information was yet available, the newspaper said.



APPENDIX 18

SAFER Grants for 2015



FEMA

Jan 21, 2015

[Email](#)[Print](#)[Comment](#)[RSS](#)



Getting Grants
by Jerry Brant

9 keys to a competitive SAFER grant

The grant period opens in about two weeks; have these bases covered to give your application the best chance at success

By Jerry Brant

The Department of Homeland Security through FEMA announced that the Staffing for Adequate Fire and Emergency Response grant application period will begin on February 9 and remain open until 5 p.m. March 6.

Related Article:

[SAFER grants: Path to a competitive](#)

application

Related content sponsored by:

This application period is actually for the 2014 SAFER grant, which is funded at \$340 million.

The SAFER grant program provides funding directly to fire departments and national, state, local or tribal organizations representing the interests of volunteer firefighters to assist them in increasing the number of firefighters that are available to help fire departments meet industry minimum standards.

This funding would allow these departments to attain 24-hour staffing to protect communities from fire and fire related hazards and to fulfill traditional missions of fire departments.

The SAFER program is comprised of two categories: hiring firefighters and recruiting and retaining volunteer firefighters.

Hiring firefighters

Included in this are the subcategories for rehiring, retention, attrition and new hires. Career, combination and volunteer fire departments are eligible to apply under this activity.

The period of performance for this grant will run for 24 months. There is no local match required. The grant will cover the full salary and fringe benefits of the SAFER firefighters.

The priorities under this category are:

- Rehiring laid-off firefighters.
- Retaining firefighters who face imminent layoff or filling positions vacated through attrition, but not filled due to economic circumstance.
- Hiring new firefighters.

Recruiting and retaining volunteers

Combination fire departments, volunteer fire departments and national, state, local, or tribal organizations that represent the interests of volunteer firefighters are eligible to apply.

The period of performance can be between 12 and 48 months and there is no local match involved.

The priority under this category is to assist departments experiencing a high rate of turnover and with staffing levels significantly below the ideal staffing required to comply with National Fire Protection Association Standards 1710 or 1720.

9 areas

Regardless of which category you are applying under there are nine areas to keep in mind as you develop your application.

- 1.** SAFER-funded activities should help your department to meet the appropriate NFPA Standard (either 1710 or 1720) for staffing and assembly if you are funded.
- 2.** SAFER should allow your department to have at least four firefighters on the first arriving apparatus.
- 3.** If you are applying under the hiring category, SAFER-funded firefighters should meet NFPA 1001 Firefighter II certification by the end of the second year.
- 4.** If you are applying under the hiring category, SAFER-funded firefighters should meet at least the minimum EMS certification for your state or locality.
- 5.** Under either category, new firefighters should receive entry-level physicals and immunizations through your SAFER program.
- 6.** New firefighters should receive annual medical exams.
- 7.** Under either category, your department's SAFER program should provide firefighters with accidental death and dismemberment insurance.
- 8.** Recruitment and retention applications should be based on a formal recruitment and retention plan. In addition, recruitment and retention applications should have a periodic evaluation of the program's impact built into the application. Hiring applications should be based on a staffing needs assessment.
- 9.** For a regional request for recruiting and retention, every department involved in the application must sign a memorandum of understanding prior to the close of the application period.

Regardless of which SAFER category your department is considering make sure you have a current DUNS number, an employee identification number and an active registration with System for Award Management.

About the author

Jerry Brant is a Senior Grant Consultant and Grant Writer with FireGrantsHelp and EMSGrantsHelp. He has 40 years of experience as a volunteer firefighter in rural west central Pennsylvania. He is a life member of the Hope Fire Company of Northern Cambria, where he served as chief for 15 years. He is currently an active member of the Patton Fire Company #1. For 20 years, Jerry was employed as the executive director and then president of a small non-profit community development corporation. Jerry has successfully written more than \$52 million in grant applications and proposals. Jerry can be reached at Jerry.Brant@FireGrantsHelp.com.



Fight in Congress, potential FEMA shutdown could affect fire grants in 84 Michigan communities

[Print](#)



By [Khalil AlHajal](#) | kalhajal@mlive.com

[Follow on Twitter](#)

on February 25, 2015 at 7:30 PM, updated February 25, 2015 at 8:01 PM

DETROIT, MI -- The U.S. Homeland Security Department could be partially shut down Friday if Congress can't come to terms on legislation to fund the agency.

And 91 federal grants awarded to 84 Michigan communities to fund firefighter salaries, equipment and fire safety initiatives could be affected.

Communities all over the state have received grants ranging from \$2,850 for equipment in Blumfield Township to \$24.2 million for firefighter hiring in Detroit in the latest round of awards from the Federal Emergency Management Agency.

Several members of Congress have warned communities relying on the grants that a shutdown could stall disbursements of the funds.

But officials in Detroit, which was awarded a total of about \$25.8 million in three different grants to pay salaries, buy equipment and fund fire prevention initiatives, weren't panicking over the threat Wednesday.

"This is not a problem yet, although we are studying the issue closely," said John Roach, a spokesman for the mayor's office.

The Senate cleared the way for passage of a funding bill Wednesday, but the bill could still face opposition in the House, according to the Associated Press.

The measure was stalled for weeks because of immigration provisions that were attached to the bill.

Republicans were seeking to undo executive actions on immigration enforcement policy issued by the president last year, and Democrats blocked action on the bill as long as it included those provisions.

Senate Majority Leader Mitch McConnell (R-Ky.) backed off the immigration measures to allow Homeland Security funding to proceed Tuesday, but House Speaker John Boehner has not said whether he'll put the legislation to a vote if it passes the Senate.

"I'm waiting for the Senate to act. The House has done their job," he said at a news

conference, sidestepping further questions on the matter, according to the A.P.

U.S. Rep. Dan Kildee (D-Flint Twp.) warned Michigan communities of the effect a Homeland Security shutdown could have on local fire departments.

"The consequences of a shutdown of the Department of Homeland Security are real and could affect public safety across Michigan," Kildee said in a statement.

"These federal fire grants put firefighters on the streets and directly support fire stations in my district and across our state."

And Homeland Security Secretary Jeh Johnson has warned that without legislation to set new spending levels, there would be no money to fund security on the southern border and disaster relief payments, according to the Associated Press.

Below is a list of all 91 funding initiatives awarded to 84 Michigan communities in FEMA's most recent rounds of grants for fire **personnel, equipment** and **prevention initiatives**:

Allen Park Fire Department, \$99,720.00

Allen Park Fire Department, \$144,000.00

Ann Arbor Township Fire Department, \$89,186.00

Ann Arbor Township Fire Department, \$427,419.00

Armada Township Fire Department, \$24,206.00

Auburn Hills Fire Department, \$22,500.00

Kenockee Township Fire Department, \$123,025.00

Battle Creek Fire Department, \$74,648.00

Emmett Township Department of Public Safety, \$23,750.00

Benton Township Fire Department, \$225,496.00

Bloomfield Township Fire Department, \$121,232.00
Boyne City Ambulance, \$139,650.00
Buckley Volunteer Fire Department, \$77,330.00
Albee Township Volunteer Fire Department, \$21,518.00
Canton Township Fire Department \$339,300.00
Clinton Township Department of Fire/Rescue/EMS, \$40,505.00
Alpine Township Fire Department, \$223,250.00
Dearborn Fire Department \$414,936.00
Dearborn Heights Fire Department, \$652,428.00
Detroit Fire Department, \$1,176,300.00
Detroit Fire Department, \$24,206,400.00
Detroit Fire Department, \$353,864.00
Dryden Township Fire Department, \$43,562.00
East Jordan Fire Department, \$76,568.00
Eaton Rapids Township Fire Department, \$100,934.00
Hudson Township Fire and Rescue, \$68,875.00
Essexville Public Safety Department, \$36,263.00
Fraser Department of Public Safety, \$86,869.00
Frederic Township Volunteer Fire Department, \$20,900.00
Gaines Township Fire Department, \$66,491.00
Otsego County Fire Department, \$233,890.00
Secord Township Fire and Rescue, \$142,833.00
Grand Haven Department of Public Safety, \$22,107.00
Grand Rapids Township Fire Department, \$174,397.00
Grand Rapids Fire Department, \$211,850.00
Healthy Homes Coalition of West Michigan, \$48,719.00
Plainfield Fire Department, \$274,860.00

The Phoenix Society for Burn Survivors Inc, \$256,120.00
Unadilla Township Fire Department, \$138,938.00
Hazel Park Fire Department, \$673,992.00
Highland Park Fire Department, \$1,568,160.00
North Oakland County Fire Authority, \$49,875.00
Ironwood Public Safety Department, \$13,680.00
Ishpeming Volunteer Fire Department, \$24,013.00
Michigan Bureau of Fire Services/Fire Fighter Training Division, \$425,000.00
Addison Township Fire Department, \$24,445.00
Leonidas Township Fire & Rescue, \$39,235.00
Leslie Fire Department, \$812,250.00
Lincoln Park Fire Department, 102,600.00
Lupton Fire Department, \$15,409.00
Luzerne Volunteer Fire Department, \$158,033.00
Mackinac Island, \$6,935.00
Marquette City Fire/Rescue, \$50,624.00
Mount Clemens Fire Department, \$97,470.00
Fruitport Township Fire Department, \$34,866.00
Muskegon Fire Department, \$9,500.00
Muskegon Heights Fire Department, \$995,000.00
Huron Township Fire Department, \$256,056.00
Norway Volunteer Fire Department, \$237,500.00
Okemos, Michigan Public Health Institute, \$424,346.00
Olivet Fire Department, \$19,000.00
Onondaga Fire Department, \$119,434.00
Brandon Fire Department, \$121,125.00
Grand Traverse Band of Ottawa and Chippewa Indians, \$25,000.00

Putnam Township Fire Department, \$91,328.00
Plymouth Community Fire Department, \$1,331,694.00
Spalding Township Fire Department, \$65,283.00
Star Township Fire Department, \$33,345.00
Richmond Lenox EMS Ambulance Authority, \$20,250.00
Rockford Public Safety Department, \$27,037.00
Rogers City Area Fire Department Authority, \$43,700.00
Romulus Fire Department, \$729,465.00
Roseville Fire Department, \$22,479.00
Sherman Township Fire Department, \$24,843.00
Blumfield Township Fire Department, \$2,850.00
Saginaw Fire Department, \$64,026.00
Sugar Island Township Fire Department, \$208,696.00
Pavilion Township Fire Department, \$209,000.00
Southgate Fire Department, \$33,660.00
St. Johns Fire Department, \$20,425.00
St. Ignace Fire Department, \$61,750.00
Stephenson Volunteer Fire Department, \$104,937.00
City of Utica, \$46,550.00
Walkerville Area Fire & Rescue, \$159,899.00
Warren Fire Department, \$56,250.00
Waterford Regional Fire Department, \$170,100.00
Waterford Regional Fire Department, \$2,950,260.00
Wayne/Westland Fire Department, \$56,250.00
Ogemaw Fire Department, \$21,470.00
White Lake Township Fire Department, \$418,787.00
Ypsilanti City Fire Department, \$800,505.00



APPENDIX 19

ISO Rating Improvements and Insurance Savings



nwi.com

Center Township fire rating could save residents cash

1

[Print](#) [Email](#)

December 22, 2014 6:54 pm • By Phil Wieland phil.wieland@nwi.com, (219) 662-5324

CROWN POINT | Center Township residents are getting a Christmas present courtesy of the Crown Point Fire Department and the Insurance Service Office, but they can't open it until March.

The ISO rates fire departments on their ability to fight fires, and the rating is used by many insurance companies to determine the cost to homeowners in premiums. Crown Point Fire Chief Greg DeLor said at Monday's Board of Public Works and

Safety meeting that a review earlier this year lowered the rating for the unincorporated portion of Center Township from a nine to a five.

DeLor said the ISO reviews the city's firefighting status about every 10 years looking at the dispatch capability, the water supply, the equipment, training and other things. The city's rating remained at four, which DeLor said is about as good as it can get for a city the size of Crown Point. The drop to a five for the township area could save residents hundreds of dollars a year on insurance.

DeLor said the rating is very low for an area without fire hydrants but, "with the equipment provided by the township and the additional manpower, we were able to demonstrate that we could produce a sufficient water flow for two hours." The water supply was possible with the help of other departments.

The Fire Department is a member of the Mutual Aid Box Alarm System, involving fire departments throughout the area in Indiana and Illinois, who are able to respond with tankers for emergencies. Although the rating is done, Center Township Trustee Paul Bremer said it doesn't take effect until March 1 and isn't used by all insurance companies in setting premiums.

Bremer said, "We have good cooperation between the township and the Fire Department, and we thank all their hard work in getting the rating down."

Mayor David Uran said, "We all benefit from the one common goal of protecting the residents."

The city and the township recently approved a five-year extension of the fire service contract at \$375,000 a year, the same amount as the current three-year contract that expires at the end of this year. DeLor said the contract allows the department to use all its equipment anywhere in the city or township.

Equipment purchased by the township in the past could only be used in the unincorporated areas.

"We never know where the next call will be, and changing trucks didn't make much sense," he said. "It's much more economical to use whatever equipment we are in. So, one of the first things we discussed when Paul Bremer took office was to amend that out of the contract."

DeLor said, when he started on the department more than 20 years ago, each shift had three people on duty. The department now has at least eight and as many as 12 during the day as it expands to keep up with the city's growth. The next step could be a new station to help handle the expected growth around the Interstate 65/109th Avenue interchange, he said.



APPENDIX 20

MSA Architectural Review



MSA Architects



AIA Ohio

A Society of the American Institute of Architects

GOLD MEDAL FIRM

Battle Creek Fire Department Fire Facility Assessments



March, 2015

MSA Reference #14204.00

INTRODUCTION:

On Thursday, January 8, 2015, MSA Architects (MSA,) represented by Nestor Melnyk AIA, LEED AP BD+C performed walk-through reviews of Battle Creek Fire Department's existing facilities, including the following fire stations:

- *Station #1 195 E. Michigan Avenue*
- *Station #2 145 Washington Avenue*
- *Station #3 222 Cliff Street*
- *Station #4 8 S. 20th Street*
- *Station #5 1170 W. Michigan Avenue*
- *Station #6 2401 Capital*

The purpose of the visits was to conduct evaluations of the buildings from a physical facilities perspective, including their code compliance, ADAAG compliance, functionality, and general physical condition. In addition, overall structural and MEP (mechanical, plumbing, and electrical) conditions of the buildings were reviewed.

This report is based the observations from the walk-throughs as well as information obtained from Chief Dave Schmaltz, Battalion Chief Howard Holt, and other staff available during the walk-throughs. Existing building documentation was requested; however, no building plans were available for review. This report should serve as a generalized overview based on these observations. Detailed field measurement, documentation, and extensive analysis were not completed at this time. Should the City of Battle Creek decide to pursue renovations or additions to these structures, a more detailed and thorough building analysis is recommended, which can be focused on issues and characteristics specifically relevant to the anticipated work.

Executive Summary

The following facility assessments were conducted to review overall conditions of the City of Battle Creek's fire stations with respect to current building codes and fire facility standards. The assessments were completed by visual observation, are general in nature, and are not to be considered thorough review or analysis of the buildings. The assessments compare the existing facilities with standards for new fire station design and overall code compliance. Detailed code review or analysis was not conducted within the scope of these services.

Overall the city's fire facilities are generally dated but obviously functional. Several significant building standards issues have been observed with respect to current codes; however, existing construction is grandfathered unless work has been completed without proper approvals or authorities having jurisdiction find otherwise. No serious immediate threats to the health, safety and welfare of the occupants were noted.

The most significant issues are found at the two oldest fire stations, Stations #2 and #3. Those stations are found most deficient in compliance with both current codes as well as with current fire facility design standards. Due to costs and practical limitations of the buildings as well as their historical character and value, any significant upgrades to these buildings to achieve current fire station design standards would be extremely cost-prohibitive. Their best use would be a function that does not require substantial modifications or additions other than repair, maintenance, and upgrades of existing construction.

Stations #1 and #6 are the most current with respect to both evaluations. In general, those two stations can be most successfully brought up to date with renovations and additions.

Upgrades to Stations #4 and #5 will only marginally be effective. Station #4, although well-built and adequate in size, will require significant demolition and renovation/new construction, which will likely result in an unfavorable cost-benefit analysis. Unless only minor adjustments are planned, this station will require careful planning and design to achieve a cost-effective solution. Station #5, the smallest of the stations, could be modified with an addition to the side and possibly rear of the station to achieve positive results. Some structural modification will likely need to occur within the existing building to bring the structure up to current Essential Facilities codes; however, its simple design and small size would likely mean the upgrades would not be cost prohibitive.

PART 1: Station #1 - 195 E. Michigan Avenue



ARCHITECTURAL

Fire Station #1 was built in 1970 and serves as the fire department's headquarters. The fire station replaced the original Station #1 which was built in 1893 and located on Jackson Street near city hall. The facility is a 10,447 total square foot two-story building with a building footprint of approximately 8,618 square feet. A portion of the facility includes a basement and second floor housing offices, sleeping quarters, a kitchen, dayroom, training room, and other administrative and living functions. A one story, 5,382 square foot portion of the building includes five pull-through apparatus bays. The fire station's administrative offices were constructed within a previous training room on the east side of the building, creating several small offices and storage space. The apparatus bay includes a wooden mezzanine that is not part of the original construction. In addition, a small wooden shed was also constructed at the back of the building.

Building Code

Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage). The original building was constructed of non-combustible masonry and concrete with a metal roof structure and would likely be classified as Type 2B or better, unprotected construction. However, the shed addition to the north and the mezzanine in the apparatus bay are built with combustible wood framing and therefore reduce the

construction type of the entire facility to 5B, unprotected, combustible construction. The building is not fire suppressed and fire alarms were not observed. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes.

The building is not fire suppressed and does not have an automatic fire suppression system. Based on the most restrictive use group, construction type 5B requires that the building be less than 40 feet in height and 7,000 square feet in base area. Assuming a minimum 30' open perimeter, the code allows an area increase of 5,250 square feet due for a total allowable area of 12,250 square feet. The building area meets the code requirement. The building height also falls within the code's limitations.

There are several features of the building that do not meet the current edition of the Michigan Building Code (MBC 2009). The basement is not fire suppressed, which is a current requirement for occupied space below grade. The existing stairwells do not have handrails and guardrails that meet current code. In addition, the fire poles do not provide appropriate separation between the first and second floors. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers.

Accessibility

The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The building is not served by an elevator.



Non-ADAAG compliant restrooms



Non-ADAAG compliant doorways

Although most but not all door openings appear to meet the required widths for accessibility, many doors do not provide adequate clearances and many door knobs, which are non-compliant, were observed. All doors should be equipped with lever operator handles. Additionally, the interior signage is inadequate and does not meet ADAAG standards. The on-site parking does provide accessible parking.

General

The size and layout of the fire station are adequate but do not meet all of the criteria of a modern fire department. The current living quarters do not function well for the staff living in the facility and are not consistent with today's industry standards. The sleeping quarters are in one open room, which does not allow for privacy or separation of genders. The restroom, shower and lockers facilities are inadequate in number and do not support a staff comprised of males and females. A small clean/decontamination room is provided but does not appear to meet current industry standards. Turnout gear is stored openly, the space is too small to adequately and appropriately contain all of the gear, and there is no dehumidification or exhaust system. In addition, the turnout gear is exposed to fluorescent lighting and sunlight, both of which contain UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards. Turn out gear is also dried in the apparatus bay on open racks.



Inadequate turnout gear storage



Turnout gear in open bay and direct sunlight

Building security and privacy are significant issues with the facility. Currently, when the public enters the building, they have access to the entire facility. An existing building entry vestibule appears to comply with the ADAAG and can provide some security as well as energy savings, providing the building with an air lock entry which reduces air infiltration and provides comfort for building occupants located near the doors. Security measures in terms of access control and cameras does not exist, although we were advised that additional security is being considered.

Also, there is not adequate space for storage of fire equipment and other materials. For example, material storage, the hose washer, the turnout gear extractor, SCBA fill station, hose racks, hose driers, a small workshop, metal cabinets, shelving, and other items are set up in the aisle spaces of the apparatus bay. As a first-response facility, this can translate into operational issues in terms of efficiency and delays. Exposing this equipment to exhaust from the apparatus deteriorates it more quickly, shortening its useful life. Materials are also stored in mechanical and electrical rooms with cleaning supplies up against electrical panels.



Equipment staged in apparatus bay and lack of space for materials and supplies

Although not required in today's facilities, opportunities for basic fire training are non-existent. Many of today's fire stations incorporate features to allow basic firefighting exercises and drills to take place within the station, thereby simplifying and encouraging ongoing training.

Material Conditions

Overall, the building is in good physical condition. Many of the building finishes are dated, showing their age, and should be repaired and/or replaced; however, the overall construction appears to be sound. For example, windows are single-pane aluminum frame and are very inefficient and air infiltration is an issue. The lack of building insulation and energy-efficient windows makes this building very inefficient to heat and cool and fails to provide thermal comfort for building inhabitants.

The exterior face brick appears to be in good condition. Restroom fixtures, partitions and accessories are dated and in sub-standard condition. Although the roof has been replaced in phases within the last five to fifteen years with a new Durolast roofing system and is in good condition, ceilings have water stains and roof deck is rusting in some areas due to leaks as well as from condensation drips from HVAC systems.



Rusting of acoustic metal deck in apparatus bay and staining of ceiling tile in office areas

Due to the age of the building, hazardous materials are a concern. Asbestos may be present in materials such as pipe insulation, floors and ceilings. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, we understand that the sizes of spaces with some exceptions are generally appropriate and functional for the fire service; however, the layout, configuration, and adjacencies of the spaces are inefficient compared to current fire station design. As a rule of thumb, current fire facility planning avoids multi-story buildings, particularly for living and fire equipment support spaces, and does not include fire poles. Not only can response times be affected by vertical circulation, safety concerns are an issue with firefighters navigating stairs and poles when in a hurried and alarmed state, particularly when calls for service occur during sleep.

Structural

The building appears to be constructed of load-bearing concrete masonry and concrete floor structure with metal bar joist and deck roof structure. There were no obvious signs of structural distress.

In general, the building appears to be structurally in good condition. Critical structural deficiencies that would be a threat to the life safety of the occupants were not observed. Although the building is old,

exhibits some issues in need of repair, and may not comply with all current codes and standards, the building does appear to be structurally sound.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

It has been our experience with buildings of the age and type of this fire station likely was not designed to resist any lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today's architectural, operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

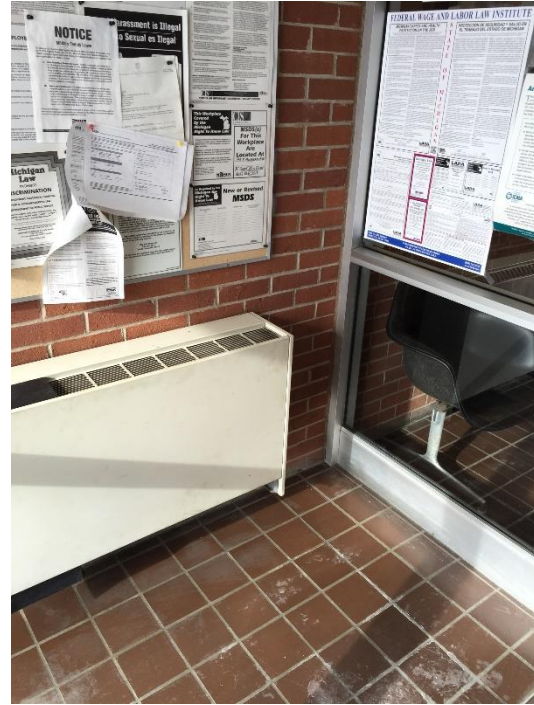
MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of Fire Station #1's plumbing, mechanical & electrical systems.

HVAC

The original building utilized a gas fired boiler located in the main mechanical room serving radiant heaters and fan coils throughout the building. The boiler system has been replaced within the last two years with a high efficiency boiler. In addition, a new chiller was installed last year. Some portions of the administrative offices have been renovated and a newer split system was installed to serve those areas.

HVAC controls are pneumatic-type, which are considered obsolete and a building automation system is not employed. It is unclear if asbestos or lead paint is present on site and further testing is recommended.



Original fan coil units

Although the major equipment is newer and in good, functional condition, consideration should be given to modification and/or replacement of air and piping distribution systems due to their age and to update the building to current codes and standards. In addition, exhaust systems should be evaluated to remove moisture and locker room air from restroom, shower, and locker areas. Make up air may need to be considered.

A light commercial grade range is located in the kitchen. A residential style ceiling mounted cabinet exhaust fan is located directly above the range to capture the contaminated air and is ducted to the exterior. In instances where a commercial style appliance is installed, a commercial hood and suppression system is required by current building codes.



Inadequate hood/no fire suppression at range.



Unit heater in apparatus bay.

The apparatus bay area is heated by original hot-water unit heaters. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. A carbon monoxide monitoring system, utilized for monitoring the concentration of toxic fumes put off by gasoline powered vehicles, was not observed. The majority of vehicles located in the apparatus bay appeared to be diesel combustions engines emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. Staff indicated that exhaust often infiltrates the sleeping and living areas due to negative pressure and migration through the fire poles. In addition to providing constant positive pressure in the sleep/living areas, the carbon monoxide and nitrogen dioxide monitoring system should be extended to include those areas and tied to an alarm system.

Plumbing

The domestic water heating system for the fire station consists of a gas fired hot water heater installed within the last five years. The hot water heater is located in the mechanical room in the basement. From the domestic hot water tank, the domestic cold, and hot water supply mains are routed throughout the building. In general, the plumbing fixtures are original to the facility and are in fair condition. Most of the fixtures are not low flow or low flush type and some faucets have been replaced with newer low flow type. The apparatus bay included trench drains which are tied into an oil separator systems.



New gas-fired domestic water heater.



Apparatus trench drains tied into oil separator.

Electrical

The electrical service is delivered to the building in the basement mechanical room. There are distribution panels throughout the facility that feed the various loads. Distribution panels are original to the building and are in good condition. A Kohler oil-fired emergency generator original to the building is located in a separate room in the basement. The Automatic Transfer Switch is located near the generator and also appears to be in good condition.



Oil-fired generator and mechanical room with new high efficiency gas-fired boiler



Some of the lighting systems in the facility are the original fixtures and are not in good condition nor is this lighting system energy efficient. Some of the linear fluorescent fixtures appear to have been replaced with more energy efficient 32watt, T8 fixtures. Most of the lighting operates 24/7 due to the nature of the facility operations. Exterior lighting should be evaluated for adequacy in providing adequate illumination for safety and security.

The existing communication service entrance is located in the basement. From this location, the cabling is distributed throughout the facility.

Communications service entrance and distribution

PART 2: Station #2 - 145 Washington Avenue



ARCHITECTURAL

Fire Station #2 at 145 North Washington Avenue was built in the 1903 after a fire destroyed the Battle Creek Sanatorium. The original building was a two-bay fire station with living quarters and stable area, including a hay loft. The facility is a 5,845 total square foot two-story building with a building footprint of approximately 3,640 square feet. The first floor houses the apparatus bay, a utility/work room, and kitchen, office and support/storage spaces. A portion of the facility includes a basement and second floor housing sleeping quarters, a dayroom, training room, and other living functions. The old hay loft is largely unoccupied but houses HVAC equipment and is used for some storage. The second floor is served by a single stair and is not separated from the apparatus bay or first floor.

The fire station is the busiest station in the city and has been a landmark in the community. Historically, at one time it served as temporary haven for individuals from the sanatorium to escape their daily rules and

imbibe in alcohol and cigarettes, gaining the name “Sinner’s Club.” Some signage to that effect still remains in the fire facility today.

Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage), and uses construction type 3B, unprotected. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes. The building is not fire suppressed nor does it include an automatic fire suppression system. Based on the most restrictive use group, construction type 3B requires that the building be less than 55 feet in height and 16,000 square feet in area. The building’s height and area therefore comply with the code.

There are several significant features of the building that do not meet the current edition of the Michigan Building Code (MBC 2011). The stairs to the second floor are not enclosed, do not provide adequate guardrails and provide only a single means of egress. In addition, the unenclosed stair allows the passage of fumes from the apparatus bay to the second floor sleeping and living quarters. The first floor living and office areas similarly open lack adequate separation from the apparatus bay.



Unenclosed, non-compliant stairs. Also allows fumes from apparatus bay to reach second floor.



Separations of spaces are inadequate. Doors and hardware are not code compliant.

The stairs to the basement are not compliant in a number of way, including handrails, guardrails, rise/run dimensions, landings, and rated enclosure. In addition, the basement is not fire suppressed, which is a current requirement for occupiable space below grade. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers

Accessibility

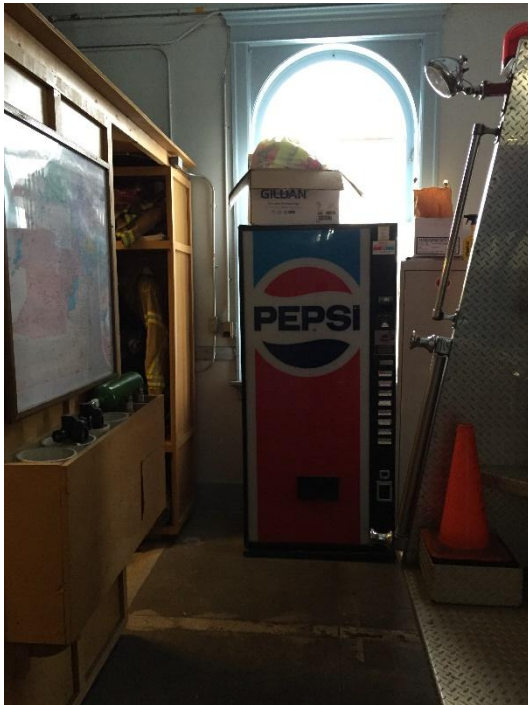
The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The building is not served by an elevator and the entrance is not accessible.

The majority of the doors do not provide adequate clearances and none of the door hardware was observed to be ADAAG compliant. All doors should be equipped with lever operator handles. Additionally, the interior signage is inadequate and does not meet ADAAG standards. The on-site parking could provide accessible parking although it does not appear to be signed and marked accordingly.

General

The size and layout of the fire station do not meet the needs of a modern fire department. The current living quarters do not function well for the staff living in the facility and are not consistent with today's industry standards. The two story designed is not preferred in a modern fire facility, especially with the long, single stair accessing the apparatus bay. The sleeping quarters are in one open room, which does not allow for privacy or separation of genders. The restroom, shower and lockers facilities are inadequate in number and size. Their layout is convoluted and they do not support a staff comprised of males and females. Fitness equipment is placed in the second floor day room. Separation for sound and order should be considered. In addition, structural loading of the floor should be evaluated for the equipment.

Adequate and organized space for storage of material and equipment is lacking as evident by numerous storage solutions implemented throughout the station, Turnout gear is stored openly, the space is too small to adequately and appropriately contain all of the gear, and there is no dehumidification or exhaust system. In addition, the turnout gear is exposed to lighting with UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards. A utility/service room is provided however an adequate clean/decontamination room is not provided. Materials are also stored in the basement without proper separations or fire suppression.



Inadequate turnout gear and other storage.



Make-shift storage solutions

As a first-response facility, this can translate into operational issues in terms of efficiency and delays. Exposing this equipment to exhaust from the apparatus deteriorates it more quickly, shortening its useful life. Materials are also stored in combination with mechanical and electrical equipment.

Building security and privacy are significant issues with the facility. Currently, there is no obvious public entrance to the building. As a result, any public trying to access the building may approach any door seeking access. Regardless of entrance used, anyone accessing the facility then has access to the entire facility. Active security measures in terms of access control and cameras do not exist.

Material Conditions

Overall, the building is in fair physical condition. Many of the building materials are dated, showing their age, and should be repaired and/or replaced. Although storm windows were added and some windows have been replaced over time, they are predominately single-pane wood windows. As such they are very inefficient and air infiltration is an issue. The exterior walls and roof lack of building insulation. Combined with energy-inefficient windows this building is very inefficient to heat and cool and fails to provide quality thermal comfort for building inhabitants. Ventilation for these spaces is also problematic based on the type of building and mechanical systems provided.

The exterior face brick appears to be in good condition. Restroom fixtures, partitions and accessories are dated and in sub-standard condition. The roof is an asphalt shingle roof which was appeared to be on good condition. The built-in gutters may require attention as sagging and deterioration in the vicinity of those was visually observed.

Due to the age of the building, hazardous materials are a concern. Asbestos may be present in materials such as pipe insulation, floors and ceilings. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, the layout, configuration, and adjacencies of the spaces do not meet current facility standards and are extremely inefficient. As a rule of thumb, current fire facility planning avoids multi-story buildings, particularly for living and fire equipment support spaces, and does not include fire poles. Not only can response times be affected by vertical circulation, safety concerns are an issue with firefighters navigating stairs and poles when in a hurried and alarmed state, particularly when calls for service occur during sleep.

Structural

The building appears to be constructed of load-bearing exterior masonry and concrete floor structure at the apparatus bay and wood framed structure for the second floor and roof structure. Visually observation revealed some sloping and sagging of wood structure in various areas of the building including the roof structure. Deterioration of steel form liners and concrete apparatus bay structure was observed.

In general, the building appears to be structurally in fair condition. Although critical structural deficiencies that would be a threat to the life safety of the occupants were not observed, a more thorough evaluation should be considered particularly with the age of the building and changes in building code requirements for structural loads. The existing station was not designed to current standards for loading such as snow loads and equipment loads. Although the building is “grandfathered” as is for code compliance as long as its use remains the same, modifications that have occurred over time as well as the general age and condition of the building may warrant further investigation. Otherwise, the building does appear to exhibit characteristics of any immediate structural concern.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

Buildings of the age and type of this fire station were not designed to resist significant lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today’s architectural, operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of Fire Station #2's plumbing, mechanical & electrical systems.

HVAC

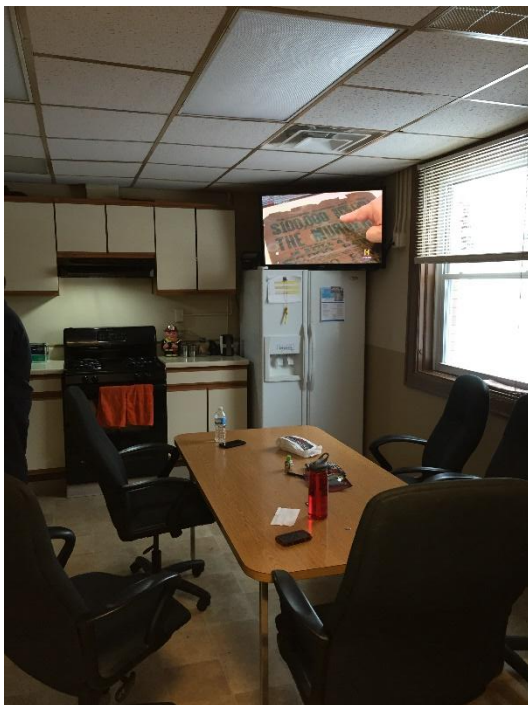


Residential style furnace with DX cooling.

The original building utilized a gas fired boiler located in the basement serving cast iron radiators throughout the building. The boiler was decommissioned and building systems were replaced with two residential style gas fired split system furnaces with DX cooling. The units are approximately twenty years old and are near the end of their useful life. One unit serves the second floor while the other serves the kitchen, watch office and other back portions of the first floor. HVAC controls are localized thermostats which provide no zone control other than by unit. The apparatus bays are heated with gas-fired unit heaters. It is unclear if asbestos or lead paint is present on site and further testing is recommended.

Exhaust systems should be evaluated to remove moisture and air from restroom, shower, and other living areas of the second floor. Although operable windows are provided, outdoor air may also need to be considered given that many of the windows are likely non-functional and are not utilized as intended now that the heating and cooling systems have been installed. .

A residential range is located in the kitchen. A residential style ceiling mounted cabinet exhaust fan is located directly above the range to capture the contaminated air and is ducted to the exterior. In commercial applications a commercial hood and suppression system is required by current building codes. Other residential appliances are provided.



Residential appliances with inadequate hood/no fire suppression at range.



Gas-fired unit heater in apparatus bay.

The apparatus bay area is heated with gas-fired unit heaters. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. A carbon monoxide monitoring system,

utilized for monitoring the concentration of toxic fumes put off by gasoline powered vehicles, was not observed. The majority of vehicles located in the apparatus bay appeared to be diesel combustions engines emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. Given the size and openness of the facility, the carbon monoxide and nitrogen dioxide monitoring system should be extended to include all living and sleeping areas and tied to an alarm system

Plumbing

The domestic water heating system for the fire station consists of a high-efficiency gas fired hot water heater installed within the last five years. The hot water heater is located in the mechanical room in the basement. From the domestic hot water tank, the domestic cold, and hot water supply mains are routed throughout the building. The plumbing fixtures are original to the facility and are in fair to poor condition. Most of the fixtures are dated and, although some faucets have been replaced, in general fixtures do not appear to be low flow or low flush type meeting today's codes and standards. The apparatus bay includes trench drains which are tied into an oil separator systems.



New high-efficiency domestic water heater.



Dated, inadequate, and non-code compliant shower

Electrical

The electrical service is delivered to the building through the first floor service/utility bay at the rear of the station room. Some upgrades have been performed to the electrical systems in the building and a small Elliot Power Systems diesel emergency generator was added. In some areas knob and tube wiring was evident, although this is presumed to have been abandoned.

The lighting systems have been replaced over time with fluorescent tube light fixtures. Although adequate, more energy efficient lighting is currently available. Exterior lighting should be evaluated for adequacy in providing adequate illumination for safety and security. Emergency and exit lighting appears to be dated and is not hard-wired. These systems should be evaluated for proper function.



Electrical panel with incremental upgrades over time.



lighting systems, not hardwired.

The existing communication service entrance is also located in the first floor service/utility bay. From this location, the cabling is distributed throughout the facility.

PART 3: Station #3–222 Cliff Street



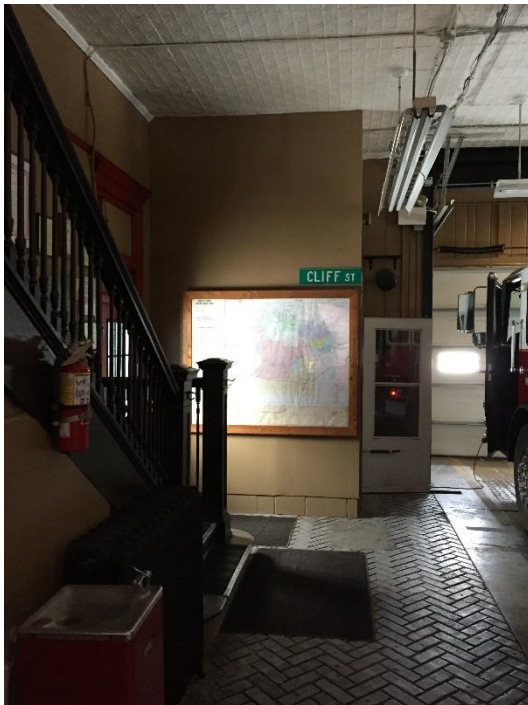
ARCHITECTURAL

Fire Station #3 at 222 Cliff Street was built in the 1902. The original building was a two-bay fire station with living quarters and stable area, including a hay loft. The facility is a 4,679 total square foot two-story building with a building footprint of approximately 3,024 square feet. The first floor houses the apparatus bays, storage areas, an office, and a kitchen. A portion of the facility includes a basement and second floor housing sleeping quarters, a dayroom, training room, and other living functions. The second floor is served by a single stair and is not separated from the apparatus bay or first floor.

The fire station has a unique architectural character. The station was built on land donated by C. W. Post and designed by Hubert Scofield. Its exterior is marked by a circular tower at the corner and is faced with a unique round river stone veneer. The original tower roof structure has been removed and reconfigured with a low-slope roof, leaving the tower aesthetically “without a hat.”

Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage), and uses construction type 3B, unprotected. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes. The building is not fire suppressed nor does it include an automatic fire suppression system. Based on the most restrictive use group, construction type 3B requires that the building be less than 55 feet in height and 16,000 square feet in area. The building's height and area therefore comply with the code.

There are several significant features of the building that do not meet the current edition of the Michigan Building Code (MBC 2011). The stairs to the second floor are not enclosed, do not provide adequate guardrails and handrails, include winders, and provide only a single means of egress. In addition, the unenclosed stair allows the passage of fumes from the apparatus bay to the second floor sleeping and living quarters. In addition, a significant structural sag is evident in the stair and the second floor landing. The first floor living and office areas similarly open lack adequate separation from the apparatus bay.



Unenclosed, non-compliant stairs. Also allows fumes from apparatus bay to reach second floor.



Non-compliant stairs to un-sprinklered basement. .

The stairs to the basement are not compliant in a number of way, including handrails, guardrails, rise/run dimensions, landings, and rated enclosure. In addition, the basement is not fire suppressed, which is a

current requirement for occupiable space below grade. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers.

Accessibility

The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The building is not served by an elevator and the entrance is not accessible.

The majority of the doors do not provide adequate clearances and none of the door hardware was observed to be ADAAG compliant. All doors should be equipped with lever operator handles. Additionally, the interior signage is inadequate and does not meet ADAAG standards. The on-site parking could provide accessible parking although it does not appear to be signed and marked accordingly.

General

The size and layout of the fire station do not meet the needs of a modern fire department. The current living quarters do not function well for the staff living in the facility and are not consistent with today's industry standards. The two story designed is not preferred in a modern fire facility, especially with the long, single stair accessing the apparatus bay. The sleeping quarters are in one open room, which does not allow for privacy or separation of genders. The restroom, shower and lockers facilities are inadequate in number and size, are dated, and do not support a staff comprised of males and females. Fitness equipment is placed in the second floor of the tower. Lighting and ventilation of the space should be considered. In addition, structural loading of the floor should be evaluated for the equipment. The base of the old hose tower is used as office space and a small day room. Although a unique space, it has not been updated to serve these functions efficiently.

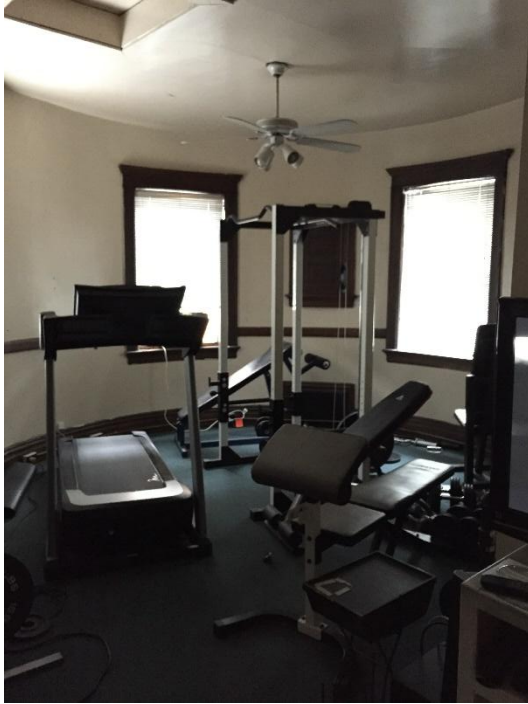


Inadequate clean/decontamination area.

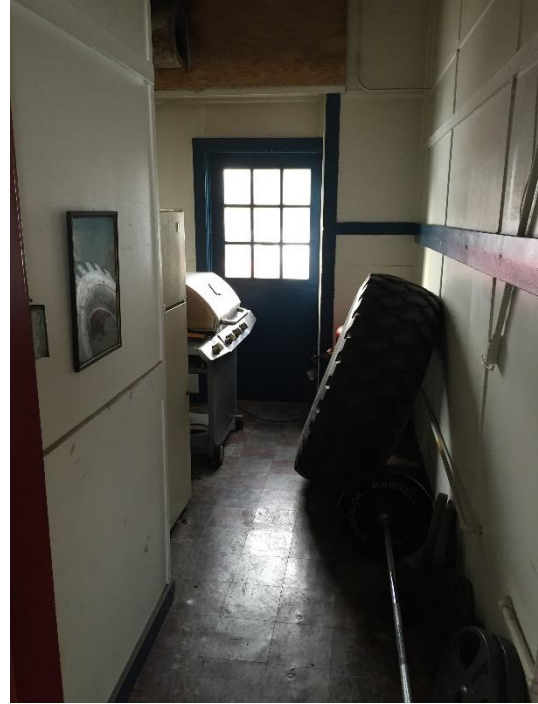


Common bunk room with inadequate ventilation and outdated lighting.

Adequate and organized space for storage of material and equipment is lacking as evident by numerous storage solutions implemented throughout the station. Turnout gear is stored openly, the space is too small to adequately and appropriately contain all of the gear, and there is no dehumidification or exhaust system. In addition, the turnout gear is exposed to lighting with UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards. Several small utility and storage rooms are provided in the rear of the station. An adequate clean/decontamination room is not provided. Materials are stored in corridors and flammable liquids are stored in closets.



Training equipment in second floor of tower.



Items stored in corridor due to lack of space.

As a first-response facility, this can translate into operational issues in terms of efficiency and delays. Exposing this equipment to exhaust from the apparatus deteriorates it more quickly, shortening its useful life. Materials are also stored in combination with mechanical and electrical equipment.

Building security and privacy are significant issues with the facility. Currently, there is no obvious public entrance to the building. As a result, any public trying to access the building may approach any door seeking access. Regardless of entrance used, anyone accessing the facility then has access to the entire facility. Active security measures in terms of access control and cameras do not exist.

Material Conditions

Overall, the building is in fair physical condition. Many of the building materials and finishes are dated, showing their age, and should be repaired and/or replaced. Although storm windows were added and some windows have been replaced with glass block, they are predominately single-pane wood windows.

As such they are very inefficient and air infiltration is an issue. The exterior walls and roof lack of building insulation. Combined with an inefficient boiler heating system, window air conditioning units, and energy-inefficient windows, this building is very inefficient to heat and cool and fails to provide quality thermal comfort for building inhabitants. Ventilation for these spaces is also problematic based on the type of building and mechanical systems provided.

The exterior stone masonry appears to be in good condition. Interior finishes are in good to poor condition, many of which are dated and showing their age. The roof is an asphalt shingle roof which was appeared to be on good condition. Newer aluminum gutters and downspouts have been installed.

Due to the age of the building, hazardous materials are a concern. Asbestos may be present in materials such as pipe insulation, floors and ceilings as indicated by notices posted in the building. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, the layout, configuration, sizes, and adjacencies of the spaces do not meet current facility standards and are extremely inefficient. As a rule of thumb, current fire facility planning avoids multi-story buildings, particularly for living and fire equipment support spaces, and does not include fire poles. Not only can response times be affected by vertical circulation, safety concerns are an issue with firefighters navigating stairs and poles when in a hurried and alarmed state, particularly when calls for service occur during sleep.

Structural

The building appears to be constructed of load-bearing exterior masonry and concrete floor structure at the apparatus bay and wood framed structure for the second floor and roof structure. Visually observation revealed some sloping and sagging of wood structure in various areas of the building including the stair, second floor and roof structure. Deterioration of steel form liners and concrete apparatus bay structure was observed. Some portions of the structural first floor slab have already been replaced.

In general, the building appears to be structurally in fair condition. Although critical structural deficiencies that would be an immediate threat to the life safety of the occupants were not observed, a more thorough evaluation should be considered particularly with the age of the building and changes in building code requirements for structural loads. In particular, the apparatus bay slab and the sagging wood structure should be evaluated for long-term performance. The existing station was not designed to current standards for loading such as snow loads and equipment loads. Although the building is “grandfathered” as is for code compliance as long as its use remains the same, modifications that have occurred over time as well as the general age and condition of the building may warrant further investigation.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

Buildings of the age and type of this fire station were not designed to resist significant lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today’s architectural, operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of the plumbing, mechanical & electrical systems.

HVAC

The building utilizes the original gas fired boiler located in the basement serving cast iron radiators throughout the building. The radiant heat system provides no zone control and is very inefficient. It is believed that asbestos or lead paint is present on site and further testing is recommended. Air conditioning is provided through window air conditioning units. The unit serving the office/day room area opens into the apparatus bay rather than to the exterior.



Original gas-fired boiler.



Window air conditioning unit open to apparatus bay.

Exhaust systems should be evaluated to remove moisture and air from restroom, shower, and other living areas of the second floor. Although operable windows are provided, outdoor air may also need to be considered given that many of the windows are likely non-functional.

A residential range is located in the kitchen. In commercial applications a commercial hood and suppression system is required by current building codes. Other residential appliances are provided.



Residential appliances with inadequate hood/no fire suppression at range. Clearances are minimal.



Cast iron radiators in apparatus bay.

The apparatus bay area is heated with the same cast iron radiators as the rest of the building. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. Battery operated carbon monoxide and smoke detectors have been installed. A carbon monoxide monitoring system, utilized for monitoring the concentration of toxic fumes put off by gasoline powered

vehicles, is recommended. The majority of vehicles located in the apparatus bay appeared to be diesel combustions engines emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. Given the size and openness of the facility, the carbon monoxide and nitrogen dioxide monitoring system should be extended to include all living and sleeping areas and tied to an alarm system.



Dedicated vehicle exhaust in apparatus bay.



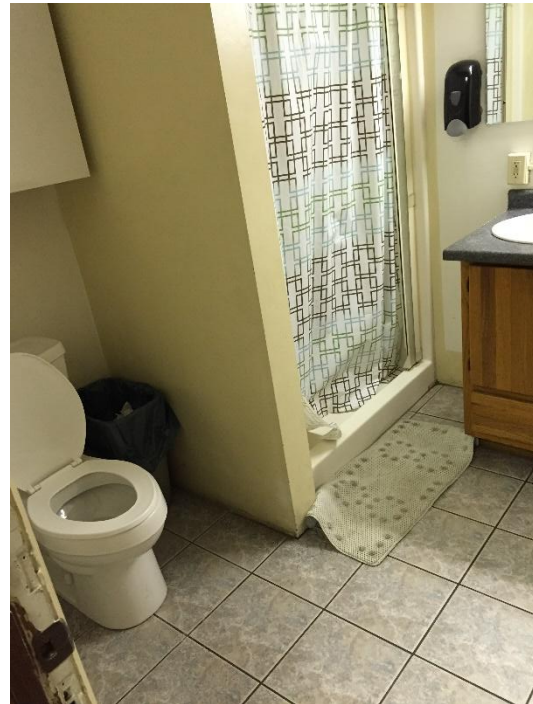
Plumbing

The domestic water heating system for the fire station consists of a high-efficiency gas fired hot water heater installed within the last five years. The hot water heater is located in the mechanical room in the basement. From the domestic hot water tank, the domestic cold, and hot water supply mains are routed throughout the building. The plumbing fixtures are original to the facility and are in fair to poor condition. Most of the fixtures are dated and, although some faucets have been replaced, in general fixtures do not

appear to be low flow or low flush type meeting today's codes and standards. The apparatus bay includes trench drains which are tied into an oil separator system.



New high-efficiency domestic water heater.



Dated, inadequate, and non-code compliant restroom/shower facilities

Electrical

The electrical service is delivered to the building through the first floor at the rear of the station room. Some upgrades have been performed to the electrical systems in the building to increase capacity and a small diesel emergency generator was added. Although not observed at the time of the walk-through, we were advised that some areas knob and tube wiring was still present. Such remaining electrical wiring should be evaluated for adequacy.

The lighting systems have been replaced in some areas with fluorescent tube light fixtures while in other areas incandescent lighting is still in place. Exterior lighting should be evaluated for adequacy in providing

adequate illumination for safety and security. Emergency and exit lighting was not observed at the time of the walkthrough and should be installed throughout the facility as required by code.



Upgraded electrical panel.



Communications entrance panel.

The existing communication service entrance is also located in the first floor at the rear of the station. From this location, the cabling is distributed throughout the facility.

PART 4: Station #4–8 South20th Street



ARCHITECTURAL

Fire Station #4 was built in the 1940's to serve Battle Creek Township. The building consists of two nearly symmetrical building wings adjacent to the apparatus bays. One of the two wings of the facility was used as a fire chief's residence while the side adjacent to the apparatus bays housed the firefighters' operations areas and living quarters. The facility is a 4,004 total square foot one-story building with a building footprint of approximately 3,464 square feet. Each of the two wings includes a partial basement. The two basements have been connected by demolishing a common wall. The apparatus bay is the second largest of the Battle Creek fire stations with three bays, one of which is a drive-thru. The bays also

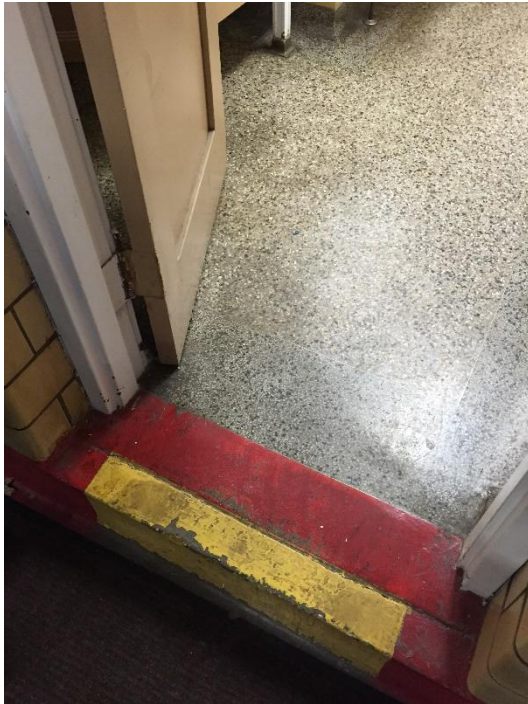
include a workshop/storage area in one corner. The building also includes a hose tower that has been rendered inoperable due to safety concerns with its use. The hose tower is currently used as a utility/janitorial room and includes a fire rated storage cabinet for flammable liquids. A small shed has also been constructed at the rear of the building for additional storage.

Building Code

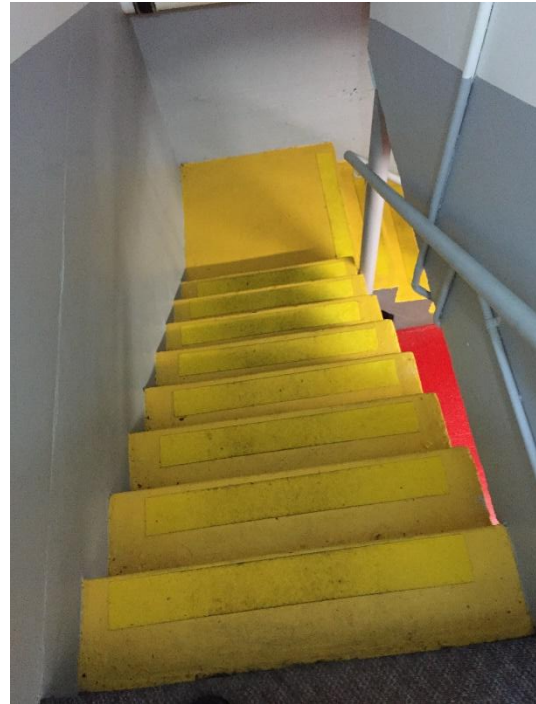
Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage). The original building was constructed of non-combustible masonry and concrete with a metal roof structure and would likely be classified as Type 2B or better, unprotected construction. The building is not fire suppressed and fire alarms were not observed. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes.

The building is not fire suppressed and does not have an automatic fire suppression system. Based on the most restrictive use group, construction type 2B requires that the building be less than three stories or 55 feet in height and 16,000 square feet in area. The building's height and area therefore comply with the code. The storage shed at the rear of the building may affect the overall building's construction type and its separation distance and construction type should be verified.

There are several features of the building that do not meet the current edition of the Michigan Building Code (MBC 2009). Many of the violations are relative only to current code standards and are not a threat to life safety. The significant non-complying areas include the following. The basement is not fire suppressed, which is a current requirement for occupied space below grade. The existing basement stairwells do not have handrails and guardrails that meet current code nor does the rise/run also does or then stair width appear to meet current codes. Although two means of egress from the basement are provided, the stairs are not enclosed and do not provide appropriate egress paths to the exterior. The apparatus bay was constructed with a step down from the rest of the building. This single step occurs at doorways, which is not code-compliant and could pose a liability for falls/tripping. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers.



Step at doorways to apparatus bay.

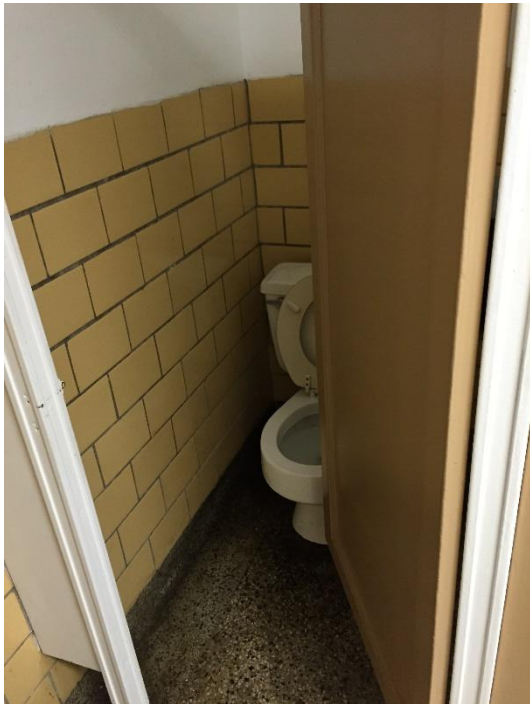


Non-compliant stairs to basement.

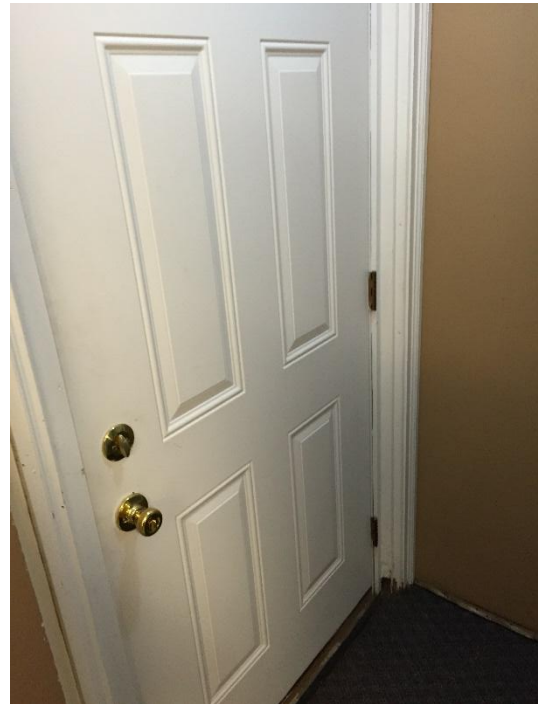
Accessibility

The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The building basement is not served by an elevator; however, provided its use can be limited to

mechanical/service type spaces, an elevator would not be required. Currently, the basement is used for turn-out gear storage and extraction, other quartermaster-type storage, and fitness.



Non-ADAAG compliant restrooms.



Non-ADAAG compliant doors and doorways.

The majority of door openings do meet the required widths for accessibility, do not provide adequate clearances, and door knobs, which are non-compliant, were observed. All doors should be equipped with lever operator handles. Also, the step between the apparatus bays and the balance of the building is non-compliant. Additionally, the interior signage is inadequate and does not meet ADAAG standards. The on-site parking does provide opportunities for accessible parking although neither the main public building entrance nor other building entrances are accessible.

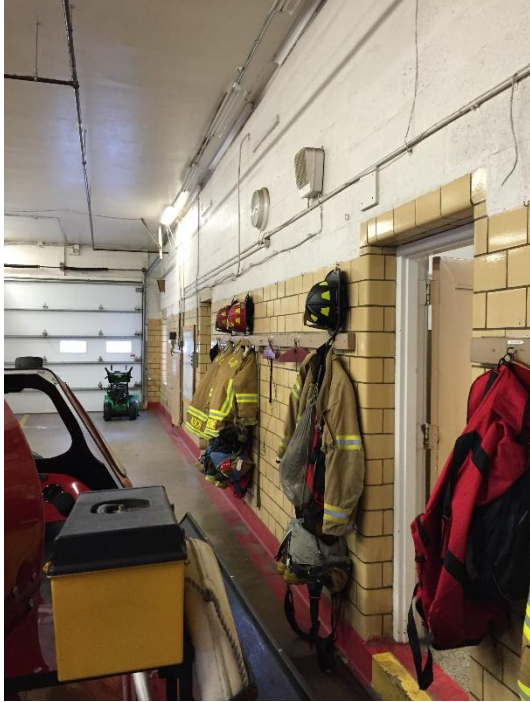
General

The overall size of the station appears to be more than adequate. The layout and configuration of spaces of the fire station marginally meet the needs of a modern fire department. The building design creates a “compartmentalized” building plan, which isolates and separates many functions into smaller rooms and spaces. Building circulation is therefore awkward, particularly from the former fire chief’s residence side of the building. As a first-response facility, this can translate into operational issues in terms of efficiency and delays.

The current living quarters, although dated, are marginally consistent with today’s industry standards. Although the sleeping quarters provide individual bunk rooms, their arrangement is scattered and inefficient. The restroom, shower and lockers facilities, although adequate in number, do not easily support a staff comprised of males and females and are undersized and dated. The spaces also open directly into the apparatus bays. Separation from the apparatus bay and other areas of the building is inadequate, allowing the possibility of fumes and vapors to enter the living and administration portions of the building. The HVAC system likely does not provide positive pressure in these areas, creating additional potential for contamination.

Although there is more than adequate space for storage of fire equipment and other materials, the storage solutions are somewhat scattered and unorganized due to the configurations of building spaces.

Turnout gear is stored openly both in the apparatus bay and in the basement. There is no dehumidification or exhaust system and the turnout gear is exposed to fluorescent lighting and sunlight, both of which contain UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards.



Turn-out gear openly stored in apparatus bays with daylight and fluorescent lighting.



Turn-out gear stored in basement with fluorescent lighting.

Building security may be a concern with the facility. Currently, the parking is adjacent to visible building entrances at the apparatus bays and the public entrance to the building is remote and inconvenient. An existing building entry vestibule exists although it does not comply with the ADAAG. This vestibule can provide some security as well as energy savings, providing the building with an air lock entry which reduces air infiltration and provides comfort for building occupants located near the doors. Security measures in terms of access control and cameras does not exist.

Material Conditions

Overall, the building is in good physical condition and was constructed of solid, durable materials including plaster and glazed concrete block. Many of the building materials, fixtures, and systems, however, are dated, showing their age, and should be repaired and/or replaced; however, the overall construction appears to be sound. For example, windows are single-pane aluminum frame and are very

inefficient and air infiltration is an issue. The lack of building insulation and energy-efficient windows makes this building very inefficient to heat and cool.

The exterior face brick appears to be in good condition. Restroom fixtures, partitions and accessories are dated, do not comply with current codes and standards, and are in good to poor condition. The roof consist of a twenty year old Durolast roofing system that has been cleaned and recoated in 2014, extending its lifespan another ten to twenty years.

Due to the age of the building, hazardous materials may be a concern. Asbestos may be present in materials such as pipe insulation, mastics, sealants, floors and ceilings. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, the sizes and numbers of spaces with some exceptions are generally appropriate and functional for the fire service; however, the layout, configuration, and adjacencies of the spaces are extremely inefficient at this fire station.

Structural

The building appears to be constructed of load-bearing concrete masonry and concrete floor structure with metal bar joist and deck roof structure. Some honeycombing of concrete structure was observed in the basement; however, there were no obvious signs of structural distress.

In general, the building appears to be structurally in good condition. Critical structural deficiencies that would be a threat to the life safety of the occupants were not observed. Although the building is old, exhibits some issues in need of repair, and may not comply with all current codes and standards, the building does appear to be structurally sound.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

A building of the age and type of this fire station was likely not designed to resist any lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today's architectural, operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of Fire Station #4's plumbing, mechanical & electrical systems.

HVAC

The original building utilized a gas fired boiler located in the basement serving radiant heaters and fan coils throughout the building. The boiler system has been replaced within the last two to three years with

a high efficiency boiler. Cooling has been handled with a variety of ways including a relatively new ductless split systems as well as through-wall air conditioning units.



Original fan coil units and ductless split systems employed.



Dehumidification is basement with stand-alone appliance.

Although the major equipment is newer and in good, functional condition, consideration should be given to modification and/or replacement of piping distribution systems due to their age and to update the building to current codes and standards. In addition, exhaust systems should be evaluated to remove moisture and room air from restroom, shower, locker, and turn-out gear storage and drying areas. Both fresh air and make up air may need to be considered. Dehumidification should also be considered as currently the basement utilizes a plug-in type appliance.

A residential range is located in the kitchen. No exhaust fan or fire suppression is provided. In instances where a commercial style appliance is installed, a commercial hood and suppression system is required by current building codes.



No hood or fire suppression at range.



Dedicated vehicle exhaust and new unit heaters in apparatus bay.

The apparatus bay area is heated by new gas fired unit heaters. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. A carbon monoxide monitoring system, utilized for monitoring the concentration of toxic fumes put off by gasoline powered vehicles, was not observed. The majority of vehicles located in the apparatus bay appeared to be diesel combustions engines emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. Staff indicated that exhaust often infiltrates the sleeping and living areas due to negative pressure and lack of separation of the spaces. In addition to providing constant positive pressure in the sleep/living areas, the

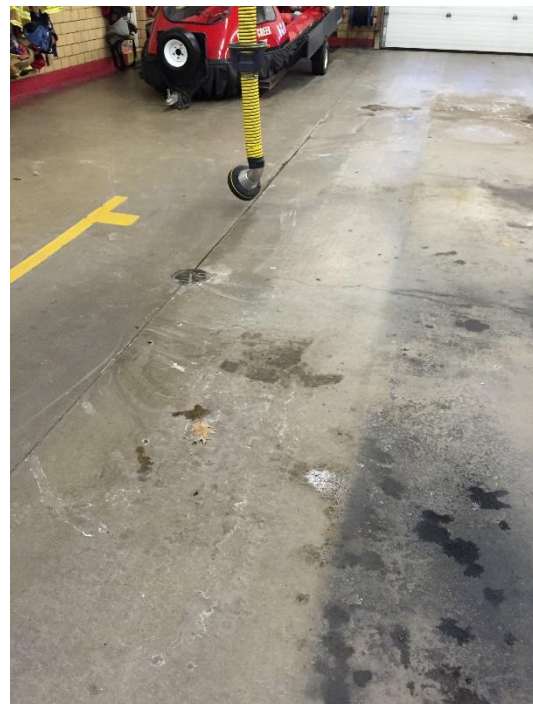
carbon monoxide and nitrogen dioxide monitoring system should be extended to include those areas and tied to an alarm system.

Plumbing

The domestic water heating system for the fire station consists of a gas fired hot water heater installed within the last five years. The hot water heater is located in the mechanical room in the basement. From the domestic hot water tank, the domestic cold, and hot water supply mains are routed throughout the building. In general, the plumbing fixtures are original to the facility and are in fair condition. Most of the fixtures are not low flow or low flush type and some faucets have been replaced with newer low flow type. The apparatus bay included floor drains which appear to be inadequate to drain the bays as the concrete slabs do not exhibit adequate slope. .



New gas-fired domestic water heater.



Inadequate drainage to apparatus floor drains.

Electrical

The electrical service is delivered to the building in the basement mechanical room to original equipment. Although dated, it is in good condition. A natural gas-fired emergency generator original to the building is located in basement mechanical room.



Natural gas-fired generator.



Vintage electrical service equipment.

Much of the lighting in the facility has been replaced with linear fluorescent fixtures. Most of the lighting operates 24/7 due to the nature of the facility operations. Exterior lighting should be evaluated for adequacy in providing adequate illumination for safety and security.

The existing communication service entrance is located in the basement. From this location, the cabling is distributed throughout the facility.



Communications service entrance and distribution

PART 5: Station #5—1170 West Michigan Avenue



ARCHITECTURAL

Fire Station #5 was built in 1957. The building is a small structure in a residential character and scale. The building was designed to fit within the residential context of the neighborhood and was also designed to allow an addition to one side. The facility is the smallest of the Battle Creek fire stations and is a 1,936 total square foot two-story building with a building footprint of approximately 1,892 square feet. The apparatus bay is a single drive-thru bay. A small garage has also been constructed at the rear of the building for additional storage.

Building Code

Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage). The original building appears to have been constructed of combustible structure and would therefore classify as Type 5B, unprotected construction type. With some additional analysis, the building construction type may classify as 3B; however, for purposes of this evaluation the difference would not change the outcome of this report. The building is not fire suppressed and fire alarms were not observed. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes.

The building is not fire suppressed and does not have an automatic fire suppression system. Based on the most restrictive use group, construction type 5B requires that the building be less than two stories or 40 feet in height and 7,000 square feet in area. The building's height and area therefore comply with the code, inclusive of the garage at the rear of the building.

There is one significant feature of the building that does not meet the current edition of the Michigan Building Code (MBC 2009). The existing second floor has a single means of egress, which may be acceptable for an occupant load of less than ten; however, the stair is too steep, does not have handrails and guardrails that meet current code, is not enclosed, and does not provide proper egress width. The stair also does not provide an appropriate egress path to the exterior and opens directly into the apparatus bay. The second floor appears to have been designed as an attic storage space; however, it has been used as a day room and fitness area. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers. These violations are relative only to current code standards and are not necessarily a threat to life safety.



Egress stairs are too steep, are unenclosed, and discharge into the apparatus bay.



Stairs lack appropriate handrails and guardrails..

Accessibility

The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The second floor is not served by an elevator.



Non-ADAAG compliant restrooms.



Non-ADAAG compliant doors.

The majority of door openings do not meet the required widths for accessibility, do not provide adequate clearances, and door knobs, which are non-compliant, were observed. All doors should be equipped with lever operator handles. Also, the stairs to the second floor are non-compliant. Additionally, the interior signage is inadequate and does not meet ADAAG standards. The on-site parking does provide opportunities for accessible parking although an accessible route to the public building entrance is not available and neither the main public building entrance nor other building entrances are accessible.

General

The overall size of the station appears to be less than adequate. The general layout and configuration of spaces of the fire station minimally meets the needs of a modern fire department; however, additional areas should be provided to alleviate crowding, congestion, and the use of the second floor areas. The building design creates a very tight building plan, which forces many functions into smaller rooms and spaces. Building circulation, although minimal, is therefore awkward in that it is restricted in many places

as a result of the tight areas. As a first-response facility, this can translate into operational issues in terms of efficiency.

The current living quarters do not function well for the staff living in the facility and are not consistent with today's industry standards. The sleeping quarters are in one open room, which does not allow for privacy or separation of genders. The restroom, shower and lockers facilities are inadequate in number and do not support a staff comprised of males and females. The spaces also open directly into the apparatus bays. Separation from the apparatus bay and other areas of the building is inadequate, allowing the possibility of fumes and vapors to enter the living and administration portions of the building. The HVAC system likely does not provide positive pressure in these areas, creating additional potential for contamination.

No clean/decontamination room is provided. Turnout gear is stored openly in both the apparatus bay and at the top of the non-compliant stairs. Space is inadequate to appropriately contain all of the gear and there is no dehumidification or exhaust system. In addition, the turnout gear is exposed to fluorescent lighting and sunlight, both of which contain UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards. Storage areas for fire equipment and other materials are inadequate as materials are stored opening and "wherever space permits."



Turn-out gear openly stored in apparatus bays with daylight and fluorescent lighting. Inadequate space for materials and supplies.



Material storage space is lacking.

Building access and security may be a concern with the facility. The parking is at the rear of the building while the public entrance to the building is remote and inconveniently located at the front. An existing building entry vestibule exists although it does not comply with the ADAAG. This vestibule can provide some security as well as energy savings, providing the building with an air lock entry which reduces air infiltration and provides comfort for building occupants located near the doors. Security measures in terms of access control and cameras does not exist.

Material Conditions

Overall, the building is in good physical condition. Some of the building finishes, fixtures, and systems, however, are dated, showing their age, and may need to be repaired and/or replaced; however, the overall construction appears to be sound. Many windows have been replaced and overall the building has generally been well-maintained.

The exterior face brick appears to be in good condition. Restroom fixtures, partitions and accessories are dated, do not comply with current codes and standards, and are in good to poor condition. The roof consist of asphalt shingle steep slope roofing with aluminum gutters and downspouts.

Due to the age of the building, hazardous materials may be a concern. Asbestos may be present in materials such as pipe insulation, mastics, sealants, floors and ceilings. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, the numbers of spaces with some exceptions are generally appropriate and functional for the fire service; however, their sizes, layout, configuration, and adjacencies have been outgrown relative to modern fire service.

Structural

In general, the building appears to be structurally in good condition. The building appears to be constructed of load-bearing concrete masonry and wood floor and roof structure. There were no obvious signs of structural distress. Critical structural deficiencies that would be a threat to the life safety of the occupants were not observed.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

A building of the age and type of this fire station was likely not designed to resist any lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today's architectural,

operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of Fire Station #5's plumbing, mechanical & electrical systems.

HVAC

The building utilizes a residential style gas-fired split system furnaces with DX cooling. The unit is housed in a utility room on the second floor and is approximately fifteen years old. The unit is nearing the end of its useful life. The condensing unit is ground-mounted at the rear of the building. HVAC controls are localized thermostats which provide no zone control other than by supply air dampers. The apparatus bay is heated with newer gas-fired unit heater. It is unclear if asbestos or lead paint is present on site and further testing is recommended.



Residential style gas-fired split system furnace.



Residential exhaust fan in shower room.

Exhaust systems should be evaluated to remove moisture and room air from restroom and shower areas. Both fresh air and make up air may need to be considered. Dehumidification should also be considered.

A residential range is located in the kitchen. No exhaust fan or fire suppression is provided. In instances where a commercial style appliance is installed, a commercial hood and suppression system is required by current building codes.



No fire suppression at range although gas is tied to a disconnect and reset for safety.



Localized, battery operated carbon monoxide detector in sleep room.

The apparatus bay area is heated by new gas fired unit heaters. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. Although localized battery-operated carbon monoxide detectors were observed, a carbon monoxide monitoring system, utilized for monitoring the concentration of toxic fumes put off by gasoline powered vehicles, should be installed,

particularly since the sleeping quarters are adjacent and the second floor is open to the bay. The vehicle located in the apparatus bay appeared to be a diesel combustion engine emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. Staff indicated that exhaust often infiltrates the sleeping and living areas due to negative pressure and lack of separation of the spaces. In addition to providing constant positive pressure in the sleep/living areas, the carbon monoxide and nitrogen dioxide monitoring system should be extended to include those areas and tied to an alarm system.

Plumbing

The domestic water heating system for the fire station consists of a gas fired hot water heater. In general, the plumbing fixtures are in good to fair condition. Most of the fixtures are not low flow or low flush type and some faucets have been replaced with newer low flow type. The apparatus bay includes a trench drain which appears to be adequate and has been tied to an oil separator within the last few years.



Original water fountain. .



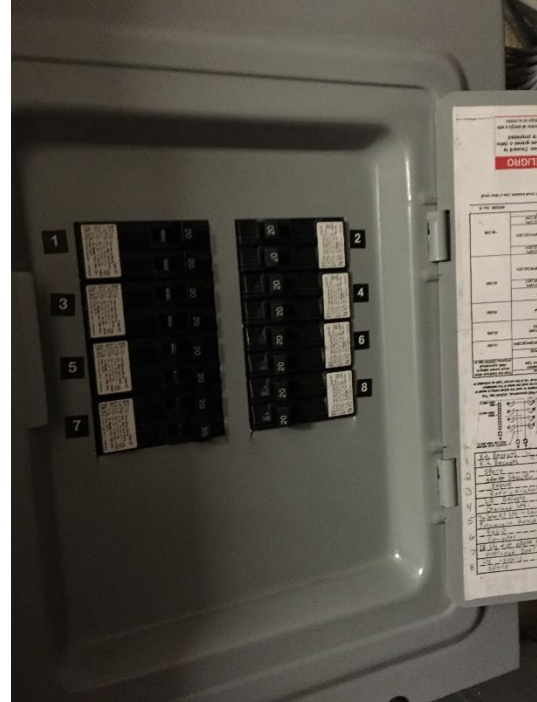
Apparatus trench drain tied to oil interceptor. .

Electrical

The electrical service is delivered to the building in a utility room near the front entrance and is in good condition. A small Elliot Power Systems diesel-fired emergency generator was added to the building and is located outside the day room.



Diesel-fired generator.



Electrical panel.

Much of the lighting in the facility has been replaced with fluorescent fixtures. Most of the lighting operates 24/7 due to the nature of the facility operations. Exterior lighting should be evaluated for adequacy in providing adequate illumination for safety and security.

The existing communication service entrance is located in the basement. From this location, the cabling is distributed throughout the facility.

PART 6: Station #6 - 2401 Capital



ARCHITECTURAL

Fire Station #6 was built in 1974 for Battle Creek Township. It originally also served as the township hall with meeting facilities in the basement. The building is a 4,752 total square foot one-story structure with a building footprint of approximately 3,294 square feet. The living and office portion of the facility includes a basement housing offices, sleeping quarters, a kitchen, dayroom, training room, and other administrative

and living functions. The fire station includes two pull-through apparatus bays. In addition, a small wooden shed was also constructed at the side of the building.

Building Code

Under the current Michigan Building Code (MBC), the building is classified as a Non-Separated Mixed Use, comprised of Use Groups B (Business), R-2 (Residential), and S-2 (Storage). The building was constructed of non-combustible masonry and concrete bearing walls with a precast concrete floor and roof structure and would likely be classified as Type 1B or better, unprotected construction. However, the proximity of the combustible wood framed shed to the side of the apparatus bay technically reduces the construction type of the entire facility to 5B, unprotected, combustible construction. The building is not fire suppressed and fire alarms were not observed. By code, this structure is an Essential Facility, which is required to remain operational in the event of extreme environmental loading from wind, flood, snow, and earthquakes.

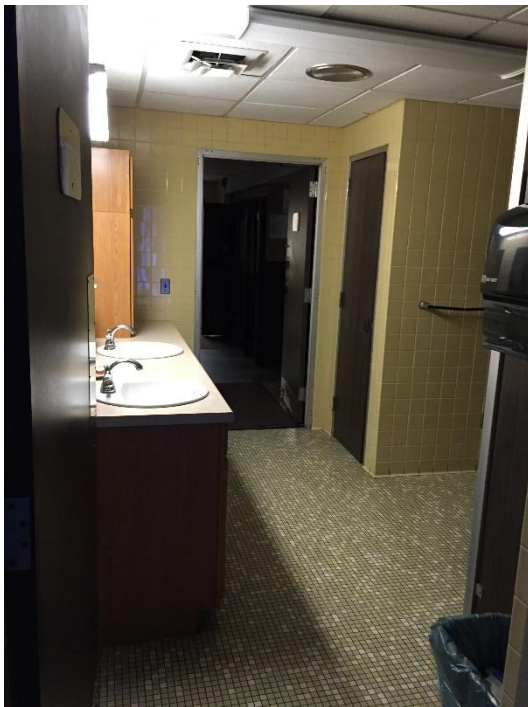
The building is not fire suppressed and does not have an automatic fire suppression system. Based on the most restrictive use group, construction type 5B requires that the building be less than two stories or 40 feet in height and 7,000 square feet in base area. The building height and area meet the code requirement.

The building appears to generally comply with most current building codes, specifically with respect to life safety issues. The most significant feature of the building that does not meet the current edition of the Michigan Building Code (MBC 2009) is that the basement is not fire suppressed, which is a current requirement for occupied space below grade. In addition, the existing stairwells do not have appropriate handrails that meet current code. Also, the apparatus bay was constructed with a step down from the rest of the building. Although some entries have been ramped, the slope does not meet code and the single step also occurs at doorways, which is not code-compliant and could pose a liability for falls/tripping. As a non-fire suppressed building, corridors should be one-hour fire rated with rated doors on closers.

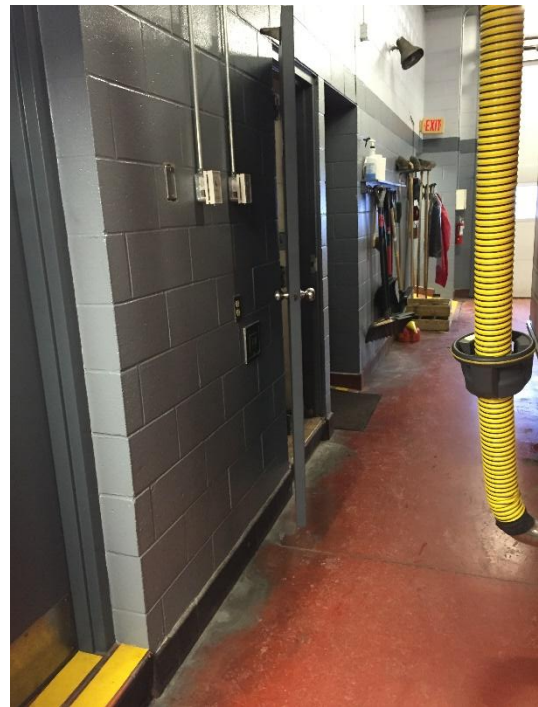
Accessibility

The MBC and the DOJ require that all governmentally owned or leased properties fully comply with the ADA Accessibility Guidelines (ADAAG). The current ADAAG does clarify that even as emergency

response facilities, these buildings are required to be accessible as staff, elected officials, administrators, inspectors, and others may have access to the facilities. However, in accordance with DOJ guidelines, residential areas used exclusively by first responders can follow the less-restrictive residential accessibility requirements in lieu of commercial guidelines. None of the showers, toilets, lavatories, or kitchen counters and fixtures meet ADAAG requirements. Fixtures are not mounted at the required heights, do not provide the required clearances, and do not provide the required grab bars per the ADAAG. Electrical devices and thermostats also are not installed at ADAAG compliant locations. The building basement is not served by an elevator.



Non-ADAAG compliant restrooms



Non-ADAAG compliant doorways and steps at doorways.

Although most but not all door openings appear to meet the required widths for accessibility, many doors do not provide adequate clearances and many door knobs, which are non-compliant, were observed. All doors should be equipped with lever operator handles. Additionally, the interior signage is inadequate and

does not meet ADAAG standards. The on-site parking does provide accessible parking although the main public building entrance is on the opposite side of the facility.

General

Overall the size and layout of the fire station marginally meets the needs of a modern fire department. The main issues with this fire station revolve around the location and arrangement of spaces. If, for example, the basement area existed on first floor (i.e. constructed as a one-story building of the same total square footage) the facility would likely be able to better house all the necessary spaces.

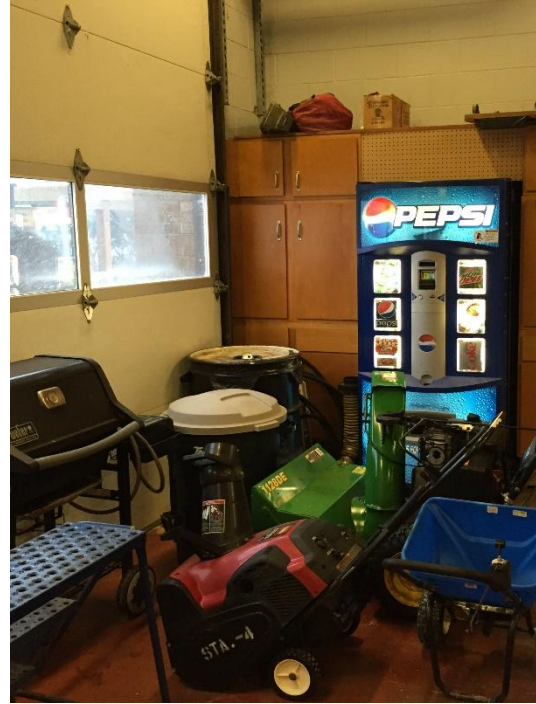
Although the current living quarters function adequately for the staff living in the facility, they are not consistent with today's industry standards. The sleeping quarters are in one open room, which does not allow for privacy or separation of genders. The restroom, shower and lockers facilities are inadequate in number and do not support a staff comprised of males and females. A small clean/decontamination room is provided but does not appear to meet current industry standards. The office area is small and inadequate to perform daily functions.

The basement, which is served by an interior stair as well as an egress directly to an exterior stair, houses a day room and large training room. The main utility/mechanical room is also housed in the basement.

Turnout gear and other materials are stored openly in the apparatus bay. The turnout gear is exposed to fluorescent lighting and sunlight, both of which contain UV rays that prematurely deteriorate the flame resistance of the gear and therefore does not meet NFPA standards.



Turnout gear stored in bay and exposed to UV.



Materials stored open to bay.

A small workshop area and storage cabinets are built-in along the side of the apparatus bay and equipment, including yard equipment, barbecue, and other materials are also stored in the apparatus bay, indicating a lack of adequate storage facilities. As a first-response facility, this can translate into operational issues in terms of efficiency and delays. Exposing this equipment to exhaust from the apparatus deteriorates it more quickly, shortening its useful life. Materials are also stored in mechanical and electrical rooms with cleaning supplies up against electrical panels.

Building security and privacy are potential issues with the facility. Currently, when the public enters the building, they have access to the entire facility. No building entry vestibule exists to provide some security as well as energy savings. Security measures in terms of access control and cameras does not exist.

Material Conditions

Overall, the building is in good to very good physical condition. Many of the building finishes are dated, showing their age, and should be repaired and/or replaced; however, the overall construction appears to be sound. The exterior face brick appears to be in good condition. Restroom fixtures, partitions and accessories are dated and in sub-standard condition. The roof was replaced within the last twelve years with a new Durolast roofing system and is in good condition. Some basement ceilings have water stains in some areas due to leaks from plumbing above.

Due to the age of the building, hazardous materials are a concern. Asbestos may be present in materials such as pipe insulation, floors and ceilings. These materials may need to be abated if the building is to be renovated. Other areas of the building should be tested for hazardous materials as well, including but not limited to lead paint.

Functionally, we note that the sizes of spaces with some exceptions are generally appropriate and functional for the fire service; however, the layout, configuration, and adjacencies of the spaces, particularly the location of some functions within the basement, are somewhat inefficient. As a rule of thumb, current fire facility planning avoids multi-story buildings, particularly for living and fire equipment support spaces. Not only can response times be affected by vertical circulation, safety concerns are an issue with firefighters navigating stairs when in a hurried and alarmed state, particularly when calls for service occur during sleep. This is also true of the steps and ramps into the apparatus bay.

Structural

The building appears to be constructed of load-bearing concrete masonry and precast concrete floor and roof structure. There were no obvious signs of structural distress and the building appears to be structurally in good condition. Critical structural deficiencies that would be a threat to the life safety of the occupants were not observed. Although it may not comply with all current codes and standards, the building does appear to be structurally sound.

Structural Implications of Building Type

As a fire station, this building is classified in the building code as Category IV, Essential Facilities. It is therefore subject to the largest-magnitude seismic and wind design forces due to the need for these types of buildings to remain intact during an earthquake or high wind event.

It has been our experience with buildings of the age and type of this fire station likely was not designed to resist any lateral loads. It is likely that if the building lateral systems were analyzed, significant deficiencies in capacity would need to be addressed. Although the building code does not require such an analysis unless the buildings are modified or added on to in such a way as to increase the lateral load stresses on the building by more than 10%, it is like that the extent of renovations required to bring the building up to today's architectural, operational and programmatic standards for fire stations would trigger this requirement. If additions and renovations are not planned, some owners voluntarily choose to implement lateral load-resisting system upgrades due to the critical nature of their buildings; however, for buildings of this age and type, this would be cost-prohibitive and it would be more economical to build new buildings.

If significant modifications or additions to the existing buildings are made and they cause a 10% increase in lateral load stresses on the existing lateral load-resisting system, the code requires that the lateral load-resisting system of the existing structure be upgraded to meet the current code requirements. For buildings of this age and type, this would be cost-prohibitive. It would likely be cheaper to build a separate new structure than to try to bring the existing structures up to meet the current structural code requirements.

MECHANICAL, PLUMBING, AND ELECTRICAL

On-site observations led to the following evaluation of Fire Station #6's plumbing, mechanical & electrical systems.

HVAC

The building is heated and cooled with two residential style gas-fired furnaces and split system cooling. The units are located in the basement mechanical room. Both cooling systems and the furnace serving

the basement level have been replaced within the last four years. Zone control with this type of HVAC system is only marginal. Exhaust systems should be evaluated to remove moisture and locker room air from restroom, shower, and locker areas. Make up air may need to be considered.

It is unclear if asbestos or lead paint is present on site and further testing is recommended.



Newer gas-fired furnace.

A light commercial grade range is located in the kitchen. A residential style ceiling mounted cabinet exhaust fan is located directly above the range to capture the contaminated air and is ducted to the exterior. In instances where a commercial style appliance is installed, a commercial hood and suppression system is required by current building codes.



Inadequate hood/no fire suppression at range.

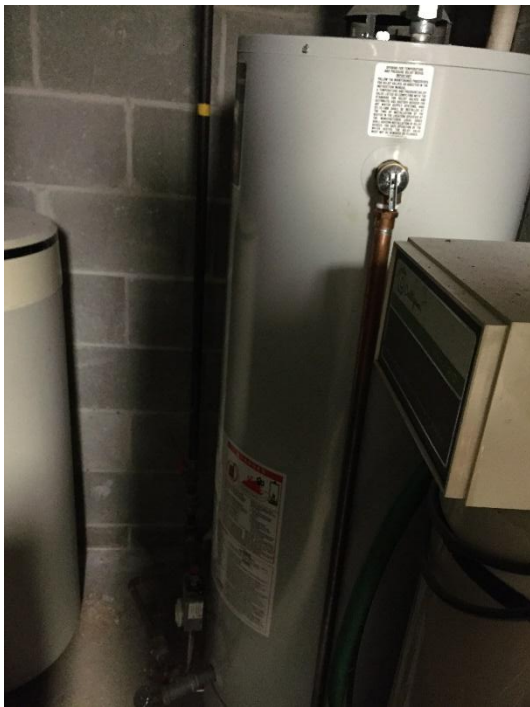


Newer gas-fired unit heater and dedicated vehicle exhaust system in apparatus bay.

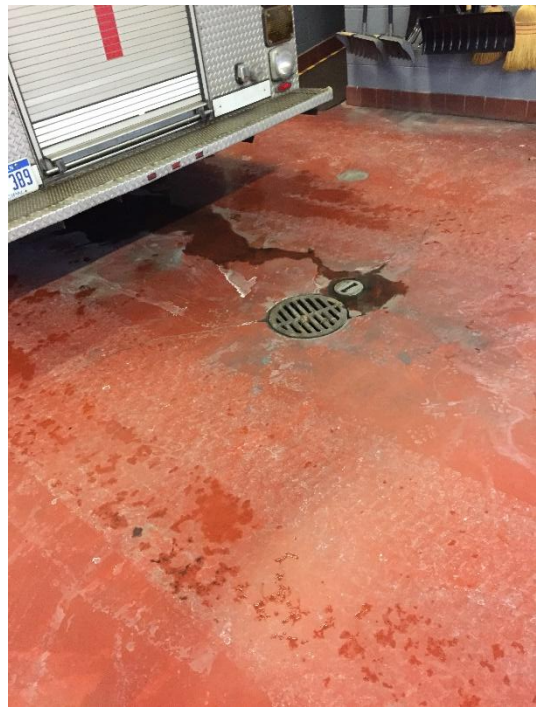
The apparatus bay area is heated by new gas-fired unit heaters. The apparatus bay is a heated only space. A relatively new dedicated vehicle exhaust system is employed. A carbon monoxide monitoring system, utilized for monitoring the concentration of toxic fumes put off by gasoline powered vehicles, was not observed. The majority of vehicles located in the apparatus bay appeared to be diesel combustions engines emitting nitrogen dioxide emissions. A system capable of monitoring nitrogen dioxide emissions, also critical to the health and safety of occupants in the apparatus bay, should also be installed. The relationship of spaces and the type of HVAC system employed does not guarantee a positive pressure scenario, allowing air from the apparatus bay to infiltrate the sleeping and living areas due to negative pressure and migration through doorways. In addition to providing constant positive pressure in the sleep/living areas, the carbon monoxide and nitrogen dioxide monitoring system should be extended to include those areas and tied to an alarm system.

Plumbing

The domestic water heating system for the fire station consists of a gas fired hot water heater installed within the last five years. The hot water heater is located in the mechanical room in the basement. From the domestic hot water tank, the domestic cold, and hot water supply mains are routed throughout the building. In general, the plumbing fixtures are original to the facility and are in fair condition. Most of the fixtures are not low flow or low flush type and some faucets have been replaced with newer low flow type. The apparatus bay includes floor drains.



New gas-fired domestic water heater.



Apparatus floor drains.

Electrical

The electrical service is delivered to the building in the basement mechanical room. There is an additional distribution panel on the main floor that feed the various loads. Although electrical upgrades have been made, the distribution panels are original to the building and are in good condition. A small diesel-fired emergency generator was added to the building and is located at the rear of the building near the gas and water service and condensing unit.



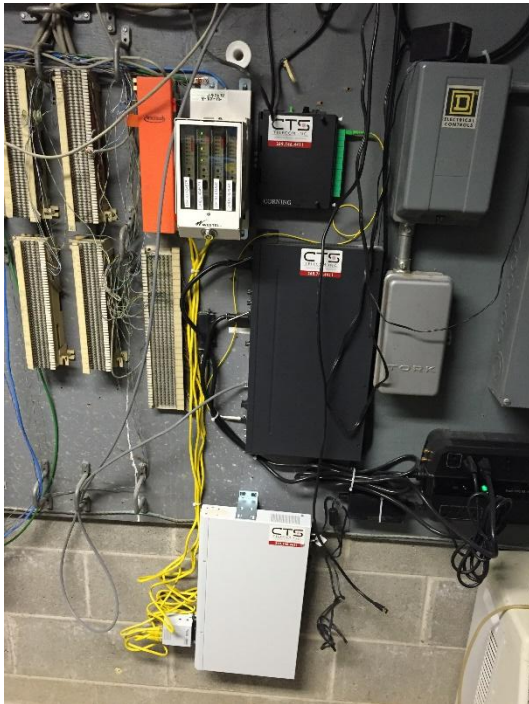
Above: Upgraded electrical system.



Right: Original distribution panel on first floor.

Some of the lighting systems in the facility are the original fixtures and consist of a combination of incandescent and mostly fluorescent fixtures. Most of the lighting operates 24/7 due to the nature of the facility operations. Exterior lighting should be evaluated for adequacy in providing adequate illumination for safety and security.

The existing communication service entrance is located in the basement. From this location, the cabling is distributed throughout the facility.



Communications service entrance and distribution

== END OF DOCUMENT ==